AUM Mathematics Pathways Success Initiative: Helping Students Succeed in Math Courses

On-Site Visit: March 6-8, 2018
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Executive Summary

The overall goals of AUM’s QEP are: **Goal 1:** Decrease the DFW rates in all developmental math courses and core math courses; **Goal 2:** Decrease the number of students enrolled in remedial mathematics courses; and **Goal 3:** Increase the retention rate of all remedial math students. The Student Learning Outcomes are: **SLO1:** Students completing the remedial mathematics program will succeed in a core mathematics course; **SLO2:** Students enrolled in mathematics courses will be able to demonstrate an increase in math skills; **SLO3:** Student anxiety relating to mathematics will be minimized.

AUM has high DFW rates in its developmental and core math courses and AUM retains its remedial students at a low rate. The QEP is designed to address these issues and help students, at higher rates, become competent in college-level mathematics. To achieve these goals, AUM plans to implement the innovative Dana Center Math Pathways model for developmental and core math success. The model has been successfully implemented in several states including Texas, Oklahoma, Washington, Missouri, and Ohio. The proposed model will assess students’ math background and need for remediation prior to students enrolling in mathematics courses. Non-course based options (NCBOs) that emphasize sophisticated assessment based individualized training modules and one-on-one tutoring will be implemented to allow students to quickly remediate their math skills so that they can be placed into math core classes. In particular NCBOs will be in place that allow for students to focus only on certain areas where remediation is needed. They will be tailored to students’ needs, which is preferable to asking students to sit through an entire semester of remediation when they might only need a few weeks’ worth of skills taught to them in order to be successful at the next level.
Institutional Overview

Auburn University at Montgomery (AUM), the metropolitan campus of Auburn University, was established by an act of the Alabama Legislature in 1967. Located on a 500-acre campus seven miles east of downtown Montgomery, AUM offers highly respected, accredited academic programs in a challenging but caring college environment. It is a broad-based academic institution, organized into five colleges and one school: College of Business with its School of Accountancy, College of Education, College of Arts and Sciences, College of Nursing and Health Sciences, and the College of Public Policy and Justice.

AUM has awarded 25,057 degrees in its fifty years and is dedicated to its mission of providing “quality and diverse educational opportunities.” AUM has a complete Strategic Plan for 2013-2018, which lays out seven core values for the university and highlights its commitment to the community. They are: “a student centered experience,” “citizenship and community engagement,” “a standard of excellence,” “commitment to constant improvement,” “diversity of people and perspective with a culture of inclusiveness,” “promotion of lifelong learning,” and “an environment of collaboration.” The university boasts 65 degree programs: 36 baccalaureate, 22 masters, 6 education specialist, and 1 joint doctoral degree. In Fall 2017, AUM had 4,894 students with 88.1% enrolled at the undergraduate level and 11.9% at the graduate level.

Student Characteristics

AUM serves a diverse population of students and is classified as a Minority Serving Institution: 49.34% of students identify as underrepresented minorities (African
American, Latino, unspecified, etc). Most students (69.2%) receive financial aid, and 52% of first-time freshmen in Fall 2016 received Pell Grants. Females make up 64.4% of students while non-traditional students (over the age of 25) comprise 22.6% of enrollment.

AUM also has a robust transfer-student population. In Fall 2016, 329 students transferred into AUM. Of these students, 63.5% earned below a 3.0 after their first semester. Fifty-five percent of these students transferred from community colleges while the remaining 45% came from other four-year institutions.

AUM students come from counties with underperforming public schools: 61% of AUM’s students come from three surrounding areas--Montgomery County (33%), Autauga County (11%), and Elmore County (17%). Based on ACT Plan results in 2014-2015, only 11.96%, 27.19%, and 19.72% of students in Montgomery, Autauga, and Elmore counties, respectively, had their 10th-grade students test into “Ready or Exceeding” categories in Math. This benchmark is set to determine likelihood of college readiness by grade 11. Thirty-four percent of AUM students entering in Fall 2016 scored a 19 or below on the ACT with a class average of 21.5. These students only earned 57.8% of the hours attempted in their first semester with a class average GPA of 2.52. AUM’s top three feeder counties insufficiently prepare incoming students for math and thus much of AUM’s entering freshman class is unprepared for college-level work. As a result, 49.9% of students entering AUM had to take one or more remedial classes in Math.

AUM’s freshmen come from high schools where education is not adequately funded. Lack of education attainment in the Montgomery Public Schools system is a
legacy that dates back to failed integration policies of the school system in the 1960s and 1970s. Federally mandated integration in 1963 led to widespread removal of middle and high socioeconomic status (SES) white students from the public school systems. School quality, to this day, correlates directly with the SES of its students because Alabama school districts are funded by income and sales taxes, which leaves low SES districts desperately underfunded. Thus, the system relegates students from poor districts, which are often predominantly minority, to substandard schools. Many graduates from these lower SES districts are coming to AUM, and they are lacking the tools they need to succeed in college-level coursework.

Evidence of substandard schools is present in the 2017 Alabama State Board of Education (ALSDE) takeover of Montgomery schools. Priority schools in Montgomery almost doubled in number from 12 in 2015 to 23 in 2016. Moreover, ACT Aspire scores for the 10th-grade classes of Jefferson Davis High School and G.W. Carver High School did not improve; in fact, both schools showed zero percent readiness in math. In addition, only 13 of 50 Montgomery County Public Schools had more than half their students proficient in both math and reading. Most of the 13 schools were magnet schools whose students are determined by grades and test scores. Further, another 15 schools had more than half their students proficient in only one subject. According to Durden Dean, District 2 Montgomery Board of Education member, “Public education in the state has been underfunded for decades. Out of 137 school systems, Montgomery County is ranked 119th in the level of support for public education. Alabama as a whole is at the bottom and Montgomery is at the bottom of the bottom” (Yawn, Jan. 26, 2017, 3:18 P.M. CT).
As the funds for public schools shrink and more of these at-risk students enter AUM, AUM recognizes the need to build programs, services, support, and infrastructure to assure that the Strategic Plan is fulfilled for all students. Although AUM continues to serve students who have come from sound public schools, AUM must continue to effectively engage and serve a student body that comes from poorly funded and poorly performing public schools.

In addition to the challenges faced by students from these failing schools, most of these students also come from families with parents who do not have college degrees (approximately 60%) if even a high school diploma. These students need intense support to overcome the academic barriers they face when they arrive at AUM. According to the U.S. Census Bureau, there is a demonstrated lack of educational attainment in Alabama. Almost eight of every ten (76.5%) of the state’s residents lack a four-year college degree, and almost one-fifth (18.1%) of those 25 years or older do not have a high school diploma or GED. Low income rates correspond with low education levels, resulting in 18.5% of Alabamians living in poverty – 5% more than the national poverty rate of 13.5%.

**Academic Strengths and Weaknesses**

**Academic Strengths**

AUM is a student-centered, community-minded, partnership-oriented university that strives for academic and institutional integrity. AUM’s mission is to enhance the educational, economic, and cultural environment of central Alabama, in particular the River Region. The university offers high-quality instruction and nationally accredited
academic programs designed to develop the critical thinking, creative, quantitative, leadership, and communication skills of students. AUM's leadership in community advancement is fostered by a curricular strategy that encourages students, faculty, staff, and administrators to commit themselves to the scholarship of civic engagement and service learning in partnership with regional community colleges, school districts, business establishments, government agencies and local employers. AUM provides academic leadership in addressing the shortage of knowledgeable workers in the Montgomery metropolitan area by providing degree programs that are tailored to the specific workforce requirements of its business, government, medical, and education communities.

Student support is a focus at AUM. The Warhawk Academic Success Center (WASC) was established in 2013 specifically to provide all the academic support needs of AUM students. WASC hosts freshman student success courses; undeclared academic advising; student success advising, including an early alert program called Warhawk Warning; Living and Learning Communities; the Bridge Program, a population of students accepted provisionally due to test scores that did not meet the university’s minimum acceptance standards; and the Auburn Guarantee Program, a one-year, hands-on, invitation-only program created for students who narrowly missed traditional admittance to Auburn University.

Another aspect of student support at AUM is the Learning Center, a multi-disciplinary tutoring center on campus. The Learning Center is comprised of two locations: the Instructional Support Lab, a drop-in office, located in the math/science building and the eponymous Learning Center, a one-on-one appointment office, located
in the Library building with the WASC. The Learning Center and Instructional Support Lab use both peer and professional tutors, with a preference given to peer tutors. In 2016, 1,642 unique students took advantage of tutoring in the Learning Center and Instructional Support Lab for a total of 12,555 contact hours. The Learning Center provides academic support across a wide variety of academic courses at all levels at AUM as well as provides various programming such as workshops, small group sessions, and topical class visits.

The Learning Center also houses The Logan Project, an NSF-funded AUM research initiative established in 2015 through AUM’s Learning Center. The goal of the project is the development of tools to reduce barriers to math education for students with disabilities.

**Academic Weaknesses**

Only 50 years old, AUM was founded to meet the needs of a Montgomery area very different from the one that exists today. In the last two decades, education has faced proration due to Alabama’s balanced-budget laws. Funds for higher education have generally been cut each year to meet the needs of K-12 schools. In addition to a decrease in funding, the student body at AUM has also changed since 1967. In its early years, the AUM student body was a mix of adults seeking to complete their degrees, some from the local Air Force bases or from state government as well as local students living at home and commuting to campus. Today, the student body mirrors the economic problems of this area. Many AUM students come from poor schools, and 60% are first-generation students. Online colleges and the other four 4-year colleges in the
city vie for the enrollment of working adult students seeking to complete degrees.

Systems and pedagogies that were normal and effective in the 1960s or 1980s are no longer flexible enough to meet the needs of the students who now attend AUM. The major academic weaknesses of AUM are summarized below.

a. Overall retention and graduation rates are lower than comparable institutions.

AUM’s first-to-second year enrolled retention rate is 66.7% while second-to-third year retention rate is 55.0%.

b. Students who have demonstrated financial need have lower retention rates. Of Fall 2016 first-time freshmen, 43% come from households earning less than $48,000; 52% of Fall 2016 first-time freshman received Pell Grants.

c. In Fall 2017 49.9% of first-year students at AUM were not academically prepared for university-level work. Upon entering AUM, many students test into developmental math, which is a two course and semester sequence (Math 0700/0701 and Math 0800/0801). These courses are four credit hours each and require a 70 or higher in both the lecture and lab to pass and move on to the next sequence. It is only after successful completion of all four of these components that students may finally enroll in a for-credit math course. Between Fall 2015-Spring 2016, 1,027 students were enrolled in one Math 0700/0701 or Math 0800/0801.

<table>
<thead>
<tr>
<th>Math course (Fall Semester 2016)</th>
<th>Pass Rate</th>
<th>DFW Rate*</th>
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</thead>
<tbody>
<tr>
<td>Math 0700 (Elem. Algebra)</td>
<td>66%</td>
<td>33%</td>
</tr>
<tr>
<td>Math 0701 (Elem. Algebra lab)</td>
<td>92%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Math 0800 (Int. Algebra)  | 69%  | 31%
Math 0801 (Int. Algebra lab) | 89%  | 11%
Math 1050 (College Algebra) | 45%  | 45%
Math 1100 (Finite) | 60%  | 40%
Math 1120 (Precal w/o Trig) | 69%  | 31%
Math 1150 (Precal w/Trig) | 47%  | 53%

*Pass/Fail rates do not take into account incompletes.

d. First-year students who completed the NSSE in 2016 were found to perform at a significantly lower level than their peers at other Southeast public schools in quantitative reasoning. This area specifically assesses students’ ability to use numerical information to examine a real-world problem or issue. Students also struggled to effectively evaluate what others concluded from numerical information. This suggests that students who are unprepared in math also are unprepared to make “real world sense” of data presented to them.

Remedial Math Enrollment within the State of Alabama

A recent review conducted by the Office of Institutional Effectiveness (2016) focused on the undergraduate enrollment trends and the trend in the total percent of undergraduate students enrolling in a remedial math course. A comparison was completed showing the percent of undergraduate enrollment in remedial math courses to the four-year public universities and selected US News Best Regional Universities (South) in the State of Alabama, over the last six years. The data for the combined Alabama four-year public universities is shown in Table 2 below. In Fall 2015, AUM’s percentage of undergraduates enrolled in a remedial math course (14.7%) was well
above the percentage of undergraduates in all Alabama four-year public universities (2.9%) in the same time period. Comparing AUM to other regional state universities also shows that AUM is well above average in the percentage of undergraduates enrolled in remedial math courses. Appendix 1 compares AUM’s percentage of undergraduates enrolled in remedial math courses (14.7%) to other regional universities in Alabama (7.7% for Alabama State University, 6.0% for Jacksonville State University, 8.6% for Troy University, with the University of North Alabama showing zero).
Process Used to Develop the QEP

Institutional Data and the QEP

By Fall 2016, one out of two freshmen enrolled at AUM was placed in remedial math. The data provided by the Office of Institutional Research showed that the proportion of freshmen placed in remedial math had increased from 29.9% in Fall 2014 to 49.9% in Fall 2016. Additionally, the percentage of Alabama 4-year public university undergraduate students enrolled in math remedial courses was considerably lower than AUM – 2.9% in 2015 for all institutions, in comparison to 14.7% for AUM. From Fall 2014 through Fall 2016, only 34% of students enrolled in remedial math courses matriculated to a college-level math course.

Examining success in mathematics courses when considering methods of instructional delivery showed that MATH 1100 Finite Math, when taught as a hybrid distance course, has a 62% failure rate. In comparison to the same course taught by traditional methods, the failure rate was 39%. As a result of these findings, two new courses were created by provide alternatives to Finite Mathematics, on the assumption that the method of delivery was not the only confounding issue. Students now have the choice of taking College Algebra or Statistics (depending on their major) in addition to or instead of Finite Mathematics.

Process Used to Select the QEP Topic

In Fall 2015, Dr. Lee Farrow, Professor of History and Director of the Center of Excellence in Learning and Teaching (CELT), was recruited to assist the Office of the Provost and the Office of Institutional Effectiveness in topic selection. The agreed-upon
goal during topic selection was to capture an all-encompassing list of topics so as not to discourage any ideas. This process was supported by data specific to AUM’s student population. Topic selection was ongoing from June 2015 through February 2016. The process of selecting AUM’s QEP initially consisted of obtaining information from faculty, staff, and students about potential learning opportunities for AUM students and the need for data to support these suggestions. The process stayed within the entire AUM community through town hall meetings followed by feedback surveys (rather than implementing one selection committee) until suggestions were reduced to ten and finally three topics for further research. After obtaining feedback from the AUM community, three committees began work on white papers for: Math with a Financial Literacy Interest; Communication and Presentation Skills; and Career Planning and Job Placement Skills. After review of the white papers, a majority of AUM’s community identified Math with a Financial Literacy Interest for the QEP. A committee charged with developing the proposal began to meet in March 2016. Eventually, the committee decided to narrow the focus to remedial math and math success. The decision to drop financial literacy was driven by the fact that AUM had already designed programs to enhance financial literacy among its students and had included it as a learning objective in its freshman seminar course (UNIV1000). The increased allocation of resources across campus and the successful implementation of curricular changes designed to increase financial literacy were already showing favorable outcomes on campus. Given these developments in the area of financial literacy along with an obviously high proportion of remedial students as well as high failure rate in remedial math, it was
decided to limit the scope of QEP to math success. As a result, the financial literacy portion was not maintained in AUM’s QEP.

The final planning and implementation committee began to meet in July, 2017 to develop: “AUM Mathematics Pathways Success Initiative: Helping Students Succeed in Gateway Math Courses.” Members of the committee include: Chair: Matthew Ragland (Associate Provost and Professor of Mathematics), Jerome Goddard (Associate Professor, Mathematics & Computer Science, Annice Yarber (Department Chair, Sociology, Anthropology & Geography), Bridgette Harper (Associate Professor, Psychology), Yi Wang (Department Chair, Mathematics & Computer Science), Danitra Tolbert (Program Associate, Financial Aid), Cara Mia Braswell (Assistant Provost, Institutional Effectiveness), Ann Gulley (Student Services Coordinator), and Austin Vigue (Student and SGA Arts and Sciences Senator). To ensure broad-based involvement from appropriate constituencies, the final planning and implementation committee had administration, faculty, staff, and student representatives. Because the Math Department will be heavily involved and affected, three members of the Math Department were chosen to work on the committee. The Faculty Senate President serves on the committee representing all faculty and one student representative comes from the Student Government Association representing the student body. Two additional students were added later to get more student representation; these students also tutor mathematics at AUM.

Formation of Three Topic Committees
Initial meetings were in June 2015 through November 2015 with three sessions designed to describe what a QEP is and the SACSCOC criterion. Additional sessions included: a presentation to AUM’s retention committee, department heads/chairs, student government association along with two town hall meetings (See Appendix 4 for several artifacts). The Director of CELT and AUM’s SACSCOC Liaison conducted these sessions.

For these first sessions, suggestions on critical needs of AUM students received from AUM faculty, staff, and students included: the need for additional attention to advising/mentoring, financial literacy, math training/tutoring, presentation skills, debating skills, critical thinking, citizenship, military/veterans services, health wellness, competency-based education, library research, research skills, reading and comprehension, ethics in society and on campus, remedial math, social skills, quality of online courses, career readiness, time management, leadership training, teamwork and problem solving, emotional intelligence, core course performance, coping with stress, and social competencies. These suggestions were discussed in these sessions but were also collected through evaluation and comment cards at the end of each session.

Campus-wide meetings continued to be scheduled by CELT for data presentation. The list of data requested and distributed included:

- Comparison report on traditional vs. online courses
- Percentage of students on Pell Grants
- Salary report (2014-15 graduates)
• Comparison of grades for all courses between online (including hybrid) and traditional
• Comparison of grades for core courses (online – including hybrid and traditional)
• Data on gender/ethnicity/age make-up
• Data report of retention by gender/ethnicity
• Noel Levitz satisfaction results from various years
• Graduate survey results
• Research on faculty-student interaction
• NSSE data
• Grade distribution for the past 6 semesters

On November 9, 2015 a final Town Hall Meeting was held– to narrow down the topics. At that meeting all topics were presented and discussed among faculty, staff, and students. Discussion included ideas and assessment results from other campuses. Soon after that town hall meeting, November 16-11, 2015, a feedback survey was solicited from faculty, staff, and students to determine which topics would most impact AUM students and have faculty support. There were 256 members of AUM faculty and staff responding to this survey. From this collection, ten topics were identified. The results of this previous survey were sent out again to the AUM community with only the top ten topics presented for ranking. This survey, conducted November 16-22, 2016, with 238 participants, identified the following three topics for further research and development: Math, Communication and Presentation Skills, and Career Planning and
Job Placement Skills. Three committees were then formed to develop white papers on these topics.

**White Papers and Committees Formed**

- **Math**: Joe Newman (Professor, Finance), Luis Cuerva-Parra (Associate Professor, Mathematics and Computer Science), Ravi Chinta (Department Head, Business Administration), Alisa Stanford (Transcript Clerk), Kate Bartlett (Scholarship Manager), Rosine Hall (Professor, Biology), and Gail Childs (Senior Director, Student Accounts)

- **Communication and Presentation Skills**: Joel Hughes (Orientations and Transitions), Rachel Mann (Instructional Support Coordinator), N.D. Seibel (Associate Professor, Communication & Theatre), Layne Holley (Strategic Communications and Marketing)

- **Career Planning and Job Placement Skills**: Alicia Dean (Institutional Effectiveness), Anna Ganey (Auxiliary Services), Bridgette Harper (Associate Professor, Psychology), Dee Ann Long (Program Associate, Military Science), Elizabeth Woodworth (Associate Professor, English & Philosophy), George Schaefer (Department Head, Kinesiology), Lisa Zanglin (Lecturer, Justice and Public Safety), Shannon Howard (Assistant Professor, English & Philosophy), Sue Thomson (Associate Professor, Biology), Twyla Williams (Human Resources)
The goal of this initial process was to create three topics, which were specific to the needs of AUM students, to continue research, and to prepare a white paper. Three committees were formed to continue research on these three topics.

After review of white papers, feedback through a survey identified Math as AUM’s QEP. The failure rates in Math courses and subsequent attrition lead to a QEP of “AUM Mathematics Pathways Success Initiative: Helping Students Succeed in Gateway Math Courses.” A final planning and implementation committee began to meet in July 2017. Two students have since been added to the committee. These two students are math tutors in The Learning Center: Adam Rodriquez and Ashley Shelton.
Identification of the Topic

In a 2015 report, the National Science Board, the policymaking body of the National Science Foundation, identified equity in education as a top priority for maintaining the nation’s position in a “globally competitive, knowledge- and technology-intensive economy” (National Science Board, 2015, p. iv). The report underscores the crucial importance of identifying and eliminating roadblocks for traditionally underrepresented groups including low socioeconomic status students, underrepresented minorities, and individuals with disabilities. Local, state, and national communities need the valuable contributions that all of AUM’s capable and diverse student body can make in the workforce. At AUM, and across higher education, mathematics is by far the greatest barrier to persistence in both STEM education and education in general. Nationally, over a million students take College Algebra each year, and more than half of them fail to earn a C or higher (Gordon, 2008). The DFW rates in developmental and introductory mathematics courses at AUM, when examined course by course, are sometimes above the 50%—this is unacceptable. There is a system of math education that is failing students at AUM, especially given that students enrolled in remedial math end up dropping out of college at much higher rates than their peers (Chen, et al., 2016). Those who place into remedial math classes at AUM are often of low socioeconomic status and come out of failing school systems in Central and South Alabama. The data is clear: placing these students into non-credit algebra courses is simply perpetuating the education system’s failure. This is unacceptable, and AUM is committed to making foundational changes to mathematics education so that all AUM students are placed on a trajectory of success. AUM will restructure developmental and
introductory math curricula and pedagogy in order to provide students with the tools they need to persist in their education and enter the workforce with a college degree.

An urgent and important challenge facing the Department of Mathematics and Computer Science at AUM is how to better serve and support AUM’s underprepared college students for success in developmental mathematics and initial gateway mathematics courses. The mathematics faculty at AUM agree that the status quo at AUM must change. A group of mathematics faculty examined the best practices in enhancing student success in Math and decided to adopt the Dana Center Math Pathways model. The model has been successfully implemented in several states including Texas Oklahoma, Washington, Missouri, and Ohio. AUM faculty also studied the implementation of this model at several universities in Texas, such as West Texas A&M University, Midwestern State University, University of Houston at Clear Lake, and University of Texas at Austin. In this model, math education pathways are tailored to specific career tracks, and the approach to remediation is focused on instruction targeted to content that is specific for each individual. AUM will base its institutional-level restructuring of mathematics education on the analysis undertaken by this group of mathematics faculty. This new model, given the name AUM Mathematics Pathways Success Initiative (AUMPSI), includes the following key components:

- Math education pathways for all students are tailored to specific career tracks and degrees.
- Student deficiencies in mathematics will be identified as early as possible and remediated as soon as possible to allow students to quickly progress into higher-level courses in their disciplines, increasing their chances of persistence.
• Customized remediation at the individual student-level will be available through the use of non-course based option [NCBO] modules.

• Remediation is focused on engaging students in active learning using real life mathematical and statistical ideas and models.

• Strategies to support students will be integrated into courses and aligned across the institution using instruction methods that incorporate evidence-based curriculum and pedagogy.

AUM Pathways to Success Initiative and Strategic Planning

AUM’s QEP is also reflected in its mission and Strategic Plan. The mission of Auburn University at Montgomery is “to provide quality and diverse educational opportunities at the undergraduate and graduate levels through the use of traditional and electronic delivery systems, and to foster and support an environment conducive to teaching, research, scholarship, and collaboration with government agencies, our community, and other educational institutions.” One of the strategic initiatives of the plan contributed to the final selection of the QEP—to increase student persistence and graduation rates. More specifically, a key performance indicator was determined to be: 

Enhance and provide additional student support for remedial math, freshmen math, English Composition, and other courses that create academic difficulty for a disproportionate number of freshmen and sophomore level students.
# Desired Student Learning Outcomes

## QEP Student Learning Outcomes

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<thead>
<tr>
<th>Student Learning Outcome 1:</th>
<th>Students completing the remedial mathematics program will succeed in a core mathematics course.</th>
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<tbody>
<tr>
<td>Student Learning Outcome 2:</td>
<td>Students enrolled in mathematics courses will be able to demonstrate an increase in math skills.</td>
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<tr>
<td>Student Learning Outcome 3:</td>
<td>Student anxiety relating to mathematics will be minimized.</td>
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## QEP Goals

<table>
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<tr>
<th>Goal 1:</th>
<th>Decrease the DFW rates in all developmental math courses and core math courses.</th>
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<tbody>
<tr>
<td>Goal 2:</td>
<td>Decrease the number of students enrolled in remedial mathematics courses.</td>
</tr>
<tr>
<td>Goal 3:</td>
<td>Increase the retention rate of all remedial math students.</td>
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Literature Review and Best Practices

Review of Best Practices in Remedial Courses

According to the Carnegie Foundation, “less than a quarter of students in developmental math courses earn a degree or credential within eight years” (Silva & White, 2013, p. 3). Bailey, Jeong, & Cho (2009) closely support this description with 80 percent of the students placing into developmental mathematics not successfully completing any college-level course within three years. (Bailey & Cho, 2010). There is a great deal of literature supporting developmental math as a barrier to graduation for many reasons including: reaching the limits of financial aid, becoming discouraged and stigmatized by placement into remedial courses, and losing motivation (NCCCS, 2013, Martorell & McFarlin, 2011; Scott-Clayton & Rodriguez, 2012). Much of the research specific to need for accelerated mathematics developmental learning is conducted within community college settings. Biswas (2007) studied 46,000 community college students showing that those requiring three developmental math courses are not advancing as desired. The study showed that “…. fewer than a fifth (19%) attempted a college algebra course and only 14 % completed that course” (pg. 1).

These findings are leading to initiatives emphasizing individualized placement and instruction in college-level math. In North Carolina (Manning & Frye, 2017), 58 colleges implemented comprehensive developmental education reform (Mathematics and English) allowing for large numbers of students to by-pass developmental math and yet succeed in their first college level math. One developmental initiative included supplemental education as a co-requisite for a college-level credit course (Manning &
The state-wide reform also had a positive impact in retention and supplemental course completion (Manning & Frye, 2017). The most recent evidence of initiatives designed to address individualized needs of underprepared students and increase their chances of succeeding in higher education can be found in efforts funded by the State of Texas Higher Education Coordinating Board (THECB). To address individualized needs, the THECB focused on: finding an assessment tool measuring specific skills, increasing support services, and using “non-traditional interventions” such as math modules and non-course based options for remediation. According to the Coordinating Board’s report (Journal of Developmental Education, 2014), “The common theme among all recommendations and best practices for improving developmental education…. calls for an individualized approach with student assessment and placement based on each student’s combination of strengths and weaknesses.”

**Placement in Remedial Courses**

Math placement instruments, which provide evidence of specific strengths and weaknesses are recommended (Journal of Developmental Education, 2014). Such instruments prevent students from receiving identical remedial instruction beyond what a particular individual needs to be ready for college math. The State of Texas Higher Education Coordinating Board reviewed placement instruments extensively before adopting a form of Accuplacer®, a computer based assessment designed to evaluate specific skills. Other institutions (Harper & Reddy, 2013) have adopted a web-based placement and supplemental instruction program called ALEKS®, (Assessment
and LEarning in Knowledge Space), including the following institutions: Portland State University, University of Illinois, University of Colorado, University of Texas, University of Florida, University of Missouri, and Purdue University. The authors (Harper & Reddy, 2013), proponents of ALEKS®, conclude that while the individual scores obtained through traditional placement tests are useful in placing students into proper classes, there is likely more that can be determined to help a student succeed. The "knowledge space" in mathematics of a student, as determined through ALEKS®, can add to the success in math courses. They conclude that it is possible to connect student outcomes in college mathematics to a student's knowledge space. The authors (Harper & Reddy, 2013) further call for state-based placement tests, such as ALEKS®, rather than varying institutional placement tests, "...state-based placements provide a substantially greater amount of information about student preparedness and course performance than traditional placement exams" (pg. 11).

A study at Foothill College (Silverman & Seidman, 2012) recently compared a control group of students enrolled in a traditional math course (Arithmetic) to a group with instruction supplemented by placement and remediation through ALEKS®. The findings supported positive effects of instructional placement and remediation by ALEKS® in terms of retention and cumulative math GPA. Other research studies show that this web-based assessment (ALEKS®) and learning system can have a positive impact on student achievement. (Sanchis, 2001; Stillson & Alsup, 2003).

Increasingly, performance in high school mathematics course completion is being factored into placement (Belfield & Crosta, 2012). Literature supports that the accuracy
of placement can be increased by adding transcription information recording high school success in courses (Scott-Clayton, Crosta, & Belfield, 2014; Pugh & Lowther, 2004; Manning & Frye, 2017).

**Class Design**

The literature on remedial class design suggests the need for career pathways and an accelerated curriculum. Course content of developmental courses should specifically prepare students for the next required college-level course. A national collaborative study (Boylan, 2002) identified as a best practice the need for skill requirements of developmental education to link to those needed for entry into college-level courses required for specified academic tracks. In other words, students take the remedial courses best suited for their career tracks.

Manning and Frye (2017) include as best practices in remedial classroom design as:

1. Compressed courses
2. Paired or linked courses
3. Curricular redesign
4. Mainstreaming with embedded support
5. Basic skills integration

Compressed courses may be offered for the same number of credits in less time. However, Wlodkowski (2003) suggests there may be a need for additional studies on compressed or accelerated learning opportunities on traditional age learners. Accelerated Learning has mostly been investigated in adult learners. Paired or linked courses are those that are combined during a term and may encompass a cohort of students. Curricular design can include sequencing instruction in order to target specific
skills needing improvement. Mainstreaming can be used to eliminate the stigma of enrollment in a remedial course. For example, a college level course may have embedded support for all students in the class, not just students needing remedial support. Basic skills integration includes going beyond teaching a skill to incorporating how the skill will be used in subsequent courses.

Non-course Competency-based options

Traditional semester-length developmental classes may be impeding college completion in comparison to students placed directly into college-level course work (Burdman, 2012). Strategies for developmental education identified by the Texas initiative (THECB), which may best impact college completion include co-requisite models and “non-course competency-based options (NCBOs)”. The Texas Success Initiative Program describes a non-course based option as seminars, which “help students avoid spending a whole semester in a developmental math… course as well as hundreds of dollars in tuition.” The format of a non-course based option can be offered as boot camps, shorter semester-based programs, or as co-requisites. The options or seminars, often supplemented with technology, help to approach the deficiencies, which may be preventing students from enrolling in a college math course.

Career specific Pathways

Ample support can be found in the literature showing that discipline-specific design of math courses to be among best practices in both developmental and introductory math classes. Barker, Bressoud, Epp, et.al (2004) advocate for math departments to consider
the students’ career path and develop unique field-of-study agreements, while also focus on mathematical abilities needed in the workplace. These recommendations specifically state that mathematics departments should consider students’ diverse career paths and colleges' unique field-of-study agreements. Likewise, Ganter and Haver (2011) recommend partnerships with specific disciplines in designing required skills for math introductory classes. Silva and White (2013) also found that students in mathematics career pathway models could as much as triple their success in half the time. The Dana Center Mathematics Pathways (DCMP) stressed “all students, regardless of college readiness, enter directly into mathematics pathways aligned to their programs of study”. The DCMP provides numerous resources to help guide any institution implementing quality mathematic pathways.

https://dcmathpathways.org/dcmp/dcmp-model

**Actions to be Implemented**

The AUM Mathematics Pathways Success Initiative (AUMPSI) model consists of three phases.

**Phase 1**

In the first phase, beginning in Fall 2019, AUM will utilize existing developmental mathematics courses and core mathematics courses. Among AUM’s complete inventory of course offerings are the following remedial and core mathematics courses:

- Remedial Courses
  - Elementary Algebra with Elementary Algebra Lab
Any of the five core courses will satisfy a student’s core mathematics requirement. Three of these five courses, Finite Mathematics, Precalculus Algebra, and Precalculus Algebra with Trigonometry, are a part of the Alabama Statewide Transfer & Articulation Reporting System (STARS) program. STARS is an excellent program that guarantees that Finite Math, Precalculus, and Precalculus with Trigonometry, and their equivalents at other public four-year Alabama institutions and public Alabama community colleges, can be taken at any Alabama state university and college. These courses are accepted as meeting the Alabama state core requirement in mathematics and are transferrable to any Alabama state university or college. Throughout AUM’s curricular overhaul, care will be taken to ensure that all curricular changes made to STARS courses are consistent with the statewide requirements that offer students the greatest flexibility for transferring institutions seamlessly within the state.

During phase 1, the development of a new remedial course, Beginning Algebra, will begin. The course will be a combination of topics from Elementary and Intermediate Algebra. Currently AUM’s Elementary and Intermediate Algebra separate remedial
algebra into coursework ranging from the most basic arithmetic skills to algebra typically taught in a second high-school algebra course. Beginning Algebra will condense key topics from both courses into a remedial course designed to prepare students for success in a mathematics core class dictated by the students’ major and interests.

The implementation of the first phase will be realized by carefully implementing NCBO modules, incorporating supplemental instruction, and connecting students to peer mentors. ALEKS® courseware will be utilized in the NCBO’s, which will target individualized insufficiencies in mathematics and afford the opportunity for students who successfully complete their NCBO to bypass certain remedial coursework. In some cases, students who are successful in their NCBO remediation will be able to enroll directly in a core for-credit mathematics course. Students will be placed into one of five categories based on their ACT/SAT mathematics subscore or a mathematics placement test in the absence of such a score:

1. Strong overall deficiencies placing the student into Elementary Algebra;
2. Competent in Elementary Algebra skills but deficient in all or a large part of Intermediate Algebra;
3. Significant deficiencies in areas of both Elementary and Intermediate Algebra but significant competencies in both as well;
4. Only slight deficiencies in Intermediate Algebra and very close to testing into a core mathematics course;
5. No deficiencies in remedial algebra.
Students placing into each of the first four categories will have the option to complete an NCBO module that should prepare them to test out of their current level and therefore be placed at a higher level at a faster pace. At the completion of each NCBO, students will be reassessed. Students reassessed after completing NCBO coursework who are not successful will enroll in the appropriate remedial course, either Elementary or Intermediate Algebra. Students without deficiencies will be allowed to enroll in a core mathematics course and will have the option to enroll in an NCBO module to strengthen their chances of successfully completing the core mathematics course.

**Phase 2**

The second phase, beginning in Fall 2020, will introduce the Beginning Algebra course. Students categorized in the third group identified as having deficiencies and competencies in both Elementary and Intermediate Algebra will complete an NCBO in hopes of moving to a core math class. If deficiencies still remain and a student is categorized in the third group, then they will take Beginning Algebra. Other students will continue to take NCBOs and enroll in Elementary or Intermediate algebra as appropriate. During this second phase, data will be collected to determine whether the two-course Elementary/Intermediate Algebra track or the one-course Beginning Algebra track to a core mathematics course is more successful. If it is determined, based upon the data, that students are more successful when being routed through the Elementary/Intermediate Algebra pathway, the Beginning Algebra pathway may be eliminated. On the other hand, if it is determined students are more successful when being routed through the Beginning Algebra pathway, then the Elementary/Intermediate
pathway may be eliminated. It may be the case that students are successful in both pathways, in which case they will both remain.

**Phase 3: Changing the Way AUM Approaches Developmental Mathematics**

Completion of a college-level math course with an A, B, or C within the first year of college is the foundational goal upon which the Dana Center New Math Pathways (DCNMP) program was developed. The addition of NCBOs to AUM’s current developmental courses builds the foundation for facilitating faster completion through student remediation. Phase 3 of the AUMPSI, beginning Fall 2021, builds on the redesigned remediation achieved in Phases 1 and 2 and implements additional pedagogical changes in both developmental and introductory courses. DCNMP curricular methods are built on a reinvention of how students engage with developmental and introductory college-level math. The pedagogy in the DCNMP model engages students in active learning with key mathematical and statistical ideas. A premise of the DCNMP program is that student engagement in conceptual learning and problem solving increases student motivation and persistence. Special care is given to ensure that developmental classes articulate well to college-level math courses. According to the DCNMP Curricular Design Team, the curricula for each of three math pathways were created to involve students in mathematical thinking and problem solving that relates to each student’s chosen career pathway. Important concepts are spiraled through the curriculum to emphasize the connection between topics. Active learning is emphasized, with the expectation that each class period will include interactive or small group activities that involve students in real life, contextual
applications of the material being covered. Terminology is built from the informal (by first introducing concepts in a context relevant to the student’s life experiences) to the discipline-specific vocabulary. Content is interdisciplinary, emphasizing the connection between fields with real data. Problem solving focuses on the multiple means of reaching a solution along with opportunities for discussion. The expectation is that the curricular experience is both constructive and reflective, with instructors providing academic coaching to encourage perseverance through the pathway (The Charles A. Dana Center. September 2013. The University of Texas at Austin. March 2017).

Figure 2. AUMPSI course alignment at AUM.
In the AUMPSI model (Figure 2), math courses are integrated into three career-centered math pathways: a Statistics Pathway or Statsway, a Quantitative Pathway or Quantway, and a STEM-prep Pathway or STEMway. Students will choose a math pathway to graduation and take appropriate courses determined by a combination of career expectations, choice of major, and personal interest. For instance, students majoring in STEM disciplines will choose one of the Precalculus classes as their mathematics core in the STEM-prep pathway, and many of these students will then move on to Calculus. Students majoring in business will choose College Algebra as their mathematics core in the Quantitative Pathway, and nursing students will choose Elementary Statistics as their mathematics core in the Statistics Pathway.

AUM will begin implementation of the Phase 3 structural and pedagogical changes to the Statway and Quantway using its non-STARS core courses, Elementary Statistics and College Algebra. Students electing for these pathways who require a developmental math class will be co-enrolled in a specialized student success course. Student Success already addresses areas of motivation, study strategies, building a community, connecting to campus resources, and developing a college completion plan; however, content designed to teach students enrolled in developmental math the skills needed to succeed in math and college will be emphasized. Peer mentors will also be embedded in this course to augment what is being learned as well as encourage students to persist in these first-semester courses specifically with their NCBO remediation. Having students take their developmental math and specialized Student Success course concurrently is the foundation for this new mathematics initiative and will be designed to provide an extra layer of support to students at risk of failure due to
being underprepared in collegiate-level math skills. This individualized and focused approach is the key to success in the Dana Center Model, especially for the many students at AUM who are coming out of the failing K-12 Montgomery Public School system.

**Applying the Dana Center Model to AUM’s Pathways to Success Initiative:**

In order to properly implement the AUMPSI, AUM needs to hire new personnel; invest in mathematics placement testing (ALEKS®) and NCBO software; purchase student learning and career inventories; and train math faculty, tutors, peer mentors, and advisors. Additionally, this initiative will require creativity and collaboration between faculty, staff, and administration across all five of AUM’s Colleges, the Provost’s Office, and support services from both Academic and Student Affairs.

Within the NCBOs, developmental, and introductory math courses, AUM will provide additional support to students with disabilities. Students will have access to unique resources developed through an NSF-funded research initiative called The Logan Project. The Logan Project works closely with the Center for Disability Services to identify students with visual and print disabilities who require additional support in math. NCBO tutors who have been cross trained with the methods used by The Logan Project will provide additional tools to students with visual and print disabilities to give them improved access to all of the elements of AUMPSI.

A significant goal of AUM is to provide outreach to failing secondary schools in its community with the excellent remediation resources developed during the NCBO implementation in Phases 1 and 2. Outreach to the secondary schools in the
Montgomery Public Schools system will be focused on improving readiness for college mathematics by reducing the need for remediation when those students enter college. AUM will offer NCBO tutoring to students at local secondary institutions and give students planning to matriculate at AUM the opportunity to pass their NCBOs and place immediately into introductory courses. Strong relationships already exist between AUM and these secondary institutions because AUM’s pre-service teachers complete many of their practicum and internship hours at these schools. Instructors from the College of Education are often on-site to evaluate AUM’s pre-service teachers.

The Dana Center also provides resources for mentor relationships between institutions. Data, lessons, and resources that AUM accrues during its DCNMP implementation will be shared with two community colleges, Trenholm State Community College and Wallace Community College, with whom AUM has articulation agreements. The goal is to assist in the improvement of mathematics education at these colleges in order to increase their certificate and degree completion rates as well as their transfer rates to four-year institutions. Outreach to secondary schools and community colleges will take place in years four and five of the QEP period.
Timeline

If SACSCOC approves AUM’s QEP, AUM will hire a Director of the AUMPSI QEP in Fall 2018. Development and approval through faculty curriculum committees of the new mathematics course, Beginning Algebra, will commence Fall 2019 with the course being offered for the first time in Fall 2020. AUM will invite representatives from McGraw Hill to demonstrate the ALEKS® system as early as Spring 2018—both the math placement software and the ALEKS® Courseware will be integral in implementing AUM’s QEP. NCBOs will begin being offered beginning Summer 2019 with anticipation of remediating students sufficiently to have them bypass either MATH 0700 or MATH 0800 and entering into the next logical course in Fall 2019. Indefinitely after NCBOs begin being offered in Summer 2019, they will be offered to students during the regular fall, spring, and summer terms and before and after the fall, spring, and summer terms as appropriate. Though, it is expected that majority of the NCBOs being offered will be offered in the summer terms in anticipation of fall term.

Assessment of the QEP’s effectiveness will be completed on an annual basis, utilizing the fall, spring, and summer terms of that academic year. This will be completed by the September 30th deadline to which all academic and administrative units adhere. At the end of each semester that NCBO data can be collected, the professors of each course will provide a report of student outcomes. These reports, which will be utilized in the assessment of student learning and the effectiveness of the QEP, are created by the ALEKS® software. Since these will be available immediately after each semester, professors will be expected to send them to the Office of Institutional Effectiveness to be
stored as artifacts for the coming yearly QEP assessment report. With the Beginning Algebra course first being offered in Fall 2019, the first assessment report will be developed on September 30, 2020.
Organizational Structure

A Director of the AUMPSI QEP will be hired to teach, provide leadership, management, assessment, and supervision for the university’s QEP. The Director will oversee the Non-Course Based Option (NCBO) remedial instruction and coordinate Math Placement Testing. Working closely with the AUM Learning Center, the Director will also be responsible for identifying, hiring, and training AUMPSI tutors and mentors. AUMPSI Tutors will be hired to provide individual and small group mentoring to students. AUMPSI Mentors will be individuals with backgrounds similar to participants who will act as coaches to help students transition from high school to college and become engaged and involved during their first year. The QEP Director will have a faculty position in Mathematics, but the position will be a 12-month position. There will be a dual reporting line to both the Associate Provost for Faculty Services and Professor of Mathematics and the Department Head of Mathematics and Computer Science. The teaching load of the QEP director will be four courses per academic year. By having a faculty position in the Mathematics and Computer Science Department, the QEP Director will have direct involvement with the math faculty and by reporting to the Associate Provost, the QEP Director will have direct access to communication with the Provost’s Office.
Resources

YEARYL BUDGET

Following is a summary of the budget items and justification of how they are reasonable and necessary.

<table>
<thead>
<tr>
<th>Budget Item</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
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<td>$64,260</td>
<td>$65,545</td>
<td>$66,856</td>
<td>$68,193</td>
<td>$327,854</td>
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<td>$40,800</td>
<td>$41,616</td>
<td>$42,448</td>
<td>$43,297</td>
<td>$208,161</td>
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<td>Math Lab Coordinator</td>
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<td>$40,800</td>
<td>$41,616</td>
<td>$42,448</td>
<td>$43,297</td>
<td>$208,161</td>
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<tr>
<td>Hourly wages for 10 tutors and 10 mentors working 40 wks, 10 hrs per week at $10 per hour</td>
<td>$80,000</td>
<td>$80,000</td>
<td>$80,000</td>
<td>$80,000</td>
<td>$80,000</td>
<td>$400,000</td>
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<td>Faculty and staff travel</td>
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<td>$10,000</td>
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<td>$50,000</td>
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<td>Math placement testing 1000 student x $25</td>
<td>$25,000</td>
<td>$25,000</td>
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<td>$25,000</td>
<td>$25,000</td>
<td>$125,000</td>
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<td>General supplies</td>
<td>$10,000</td>
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<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$50,000</td>
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<td>Marketing</td>
<td>$2,000</td>
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<td>$10,000</td>
</tr>
<tr>
<td>Student projects and travel</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$50,000</td>
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<tr>
<td>Software for new computer lab</td>
<td>$25,000</td>
<td>$25,000</td>
<td>$25,000</td>
<td>$25,000</td>
<td>$25,000</td>
<td>$125,000</td>
</tr>
<tr>
<td>Peer tutor and mentor training</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$25,000</td>
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<tr>
<td>20 new computers for lab</td>
<td>$10,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$10,000</td>
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<tr>
<td>Total Budget</td>
<td>$320,000</td>
<td>$312,860</td>
<td>$315,777</td>
<td>$318,752</td>
<td>$321,787</td>
<td>$1,589,176</td>
</tr>
</tbody>
</table>

Assessment

Evaluation Plan

AUM will employ a mixed-method approach by using quantitative and qualitative data to evaluate QEP Goals and Student Learning Outcomes. The proposed evaluation design will utilize pre- and post-test data to determine the efficacy of new pathways math courses.

In order to measure students’ confidence in math problems, AUM will use the Mathematical Problem Solving-Beliefs Scale (Kloosterman & Stage, 1992), which measures mathematical skills, place of mathematics, understanding the problem,
importance of mathematics, and problem solving skills. Evidence of reliability has been acceptable to strong (Bal, 2015). To measure mathematics anxiety, AUM will also use the brief version on the Mathematics Anxiety Rating Scale (MARS) (Suinn & Winston, 2003). MARS involves asking 30 math-related questions to which students will respond using a 5-point Likert scale to determine their level of anxiety. AUM will administer these scales to remedial students in English who are not taking remedial mathematics so there is a control group. Measuring student aptitude in mathematics courses will be achieved through a set of questions, developed by AUM Mathematics Faculty, that are offered pre- and post-course.

The Office of Institutional Effectiveness (OIE) has gathered preliminary data (Fall 2014 through Fall 2016) on the success of students matriculating into remedial math in regards to their first college math course. All students beginning their college career in either Mathematics 0700 or Mathematics 0800 were including in this analysis. It explored the difficulties students enrolled in remedial mathematics had before AUM implemented this plan to lessen this seemingly adverse impact of remedial math coursework. Briefly, the results showed:

- 70% of the students who began in Math 0700 matriculated to Math 0800.
- However of those students matriculating from Math 0700 to Math 0800, only 21% matriculated to a college level Math course.
- In contrast, of the students who began in Math 0800, 78% matriculated to a college level Math course.
- For all remedial math students, only 34% matriculate to a college level math course.
OIE will be able to use this dataset as the control group for determining whether AUM’s students are matriculating through their remediation into a college-level math at a higher rate. The dataset also contains the former DFW rates of the last three freshmen cohorts, as well, so as OIE collects this data for the upcoming AUMPSI cohorts, OIE will have an easy comparison group. Further, as briefly mentioned earlier, ALEKS® provides a number of reports regarding student knowledge growth and grades on assignments with breakdowns by topic. Details can be found here:
For convenience, this ALEKS® overview can be found in Appendix 3. This will provide OIE the opportunity to assess mathematical concept comprehension at a more granular level than ever before. To assess improvements from formerly remediated cohorts, the aforementioned dataset contains students’ final grades, which can be compared to those from earlier years.

Project evaluation combines quantitative and qualitative data to address research questions and academic program goals. Formative feedback from students, faculty, and advisors will be used to improve the program if necessary. Summative quantitative data on persistence, retention, and graduation rates will address program effectiveness.

Results will be disseminated at university faculty meetings, advisor meetings, and administration meetings. Results also will be shared with local community colleges, high schools, and school board meetings to inform stakeholders about key findings and outcomes. A project website and social media page will be used to document and track program activities and outcomes.
Baseline Data

AUM’s Office of Institutional Effectiveness tracks current retention rates. Additionally, DFW rates can be pulled for courses down to individual professors. Individual students may also be monitored by their student identification number. Student mathematics learning will be measured by pre- (math placement test data) and post-test (final exam data). Students will self-identify their anxiety by answering MARS questions before beginning a mathematics course and then again at the end of a mathematics course.

AUMPSI courses will be created based on the Dana Center Model. The AUMPSI QEP Director will spearhead this process. Instructors will be hired and trained according to this model. Current instructors will be trained. The AUMPSI QEP Director will coordinate math placement testing and curriculum and support for NCBOs. The Learning Center in conjunction with the AUMPSI QEP Director will coordinate the hiring, training, and scheduling of specialized tutors and near peer mentors, who will also be hired for student support.

The AUMPSI will require collaboration between the Warhawk Academic Success Center, Learning Center/Instructional Support Lab, Math Department, and the Office of the Provost. The Director will guide this collaboration and work closely with each department in the development of the curriculum, training, and implementation. The Learning Center in with the Director will be instrumental in providing the academic support needed to help students successfully navigate these courses.
References Cited


*Dana Center Mathematics Pathways, The Dana Center Mathematics Pathways Mode.*


Pugh, C.M., & Lowther, S. *College Math Performance and Last High School Math Course* Auburn University Office of Institutional Research


Appendix 1

Developmental Math Rates in Alabama Colleges and Universities

John Glasscock
Research Analyst
Office of Institutional Effectiveness
Auburn University at Montgomery

September 25, 2017
All data contained in this report have been taken from the Alabama Commission on Higher Education Institutional Student Profiles over the years Fall 2010 to Fall 2015. The data collected include both undergraduate and graduate student populations over these years and the number and percentage of students enrolled in math remedial courses. The focus is on the undergraduate enrollment trend and the trend in the total percent of undergraduate students enrolling in a remedial math course. It is hoped by presenting these data that a case can be made for redesigning the Remedial Math sequence at Auburn University at Montgomery (AUM) as part of the Quality Enhancement Plan (QEP) to better serve the students of the university.

**Enrollment Data for AUM (FA 2010 to FA 2015)**

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate Enrollment</th>
<th>Graduate Enrollment</th>
<th>Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>4,825</td>
<td>989</td>
<td>5,814</td>
</tr>
<tr>
<td>FA 2011</td>
<td>4,411</td>
<td>867</td>
<td>5,278</td>
</tr>
<tr>
<td>FA 2012</td>
<td>4,223</td>
<td>766</td>
<td>4,989</td>
</tr>
<tr>
<td>FA 2013</td>
<td>4,333</td>
<td>763</td>
<td>5,096</td>
</tr>
<tr>
<td>FA 2014</td>
<td>4,377</td>
<td>680</td>
<td>5,057</td>
</tr>
<tr>
<td>FA 2015</td>
<td>4,257</td>
<td>662</td>
<td>4,919</td>
</tr>
</tbody>
</table>

**Rates of Undergraduate Enrollment in Remedial Math at AUM (FA 2010 to FA 2015)**

<table>
<thead>
<tr>
<th></th>
<th># of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>% of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th># of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>% of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>Total # of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>Total % of Undergraduate Students Enrolled in a Math Remedial Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>502</td>
<td>10.4%</td>
<td>160</td>
<td>3.3%</td>
<td>662</td>
<td>13.7%</td>
</tr>
<tr>
<td>FA 2011</td>
<td>431</td>
<td>9.8%</td>
<td>47</td>
<td>1.1%</td>
<td>478</td>
<td>10.8%</td>
</tr>
<tr>
<td>FA 2012</td>
<td>419</td>
<td>909%</td>
<td>38</td>
<td>0.9%</td>
<td>457</td>
<td>10.8%</td>
</tr>
<tr>
<td>FA 2013</td>
<td>397</td>
<td>9.2%</td>
<td>124</td>
<td>2.9%</td>
<td>521</td>
<td>12.0%</td>
</tr>
<tr>
<td>FA 2014</td>
<td>445</td>
<td>10.2%</td>
<td>89</td>
<td>2.0%</td>
<td>534</td>
<td>12.2%</td>
</tr>
<tr>
<td>FA 2015</td>
<td>513</td>
<td>12.1%</td>
<td>113</td>
<td>2.7%</td>
<td>626</td>
<td>14.7%</td>
</tr>
</tbody>
</table>

There are two important facts to consider in regard to the undergraduate enrollment and remedial math enrollment at AUM over the time period that is under consideration. The first fact to consider is that total undergraduate enrollment has decreased 11.8% from FA 2010 to FA 2015. During this same time period, the total percent of undergraduate enrollment in a remedial math course has increased 7.3%. This can be seen in the following graph:
It is possible to compare AUM's rates of undergraduate enrollment and the percent of undergraduate enrollment in remedial math courses to the four-year public universities, the Alabama Community College System, and selected US News Best Regional Universities (South) in the State of Alabama. The data for the combined Alabama four-year public universities is as follows:

| Enrollment Data for all Alabama Public Four-Year Universities (FA 2010 to FA 2015) |
|---------------------------------|-----------------|-----------------|-----------------|
|                                | Undergraduate Enrollment | Graduate Enrollment | Total Enrollment |
| FA 2010                        | 125,124           | 33,008           | 158,132         |
| FA 2011                        | 124,599           | 32,790           | 157,389         |
| FA 2012                        | 124,873           | 32,400           | 157,273         |
| FA 2013                        | 124,772           | 32,666           | 157,438         |
| FA 2014                        | 126,036           | 32,836           | 158,872         |
| FA 2015                        | 128,322           | 32,969           | 161,291         |

| Rates of Undergraduate Enrollment in Remedial Math at all Alabama Public Four-Year Universities (FA 2010 to FA 2015) |
|---------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                | # of Undergraduate Students Enrolled in a Math Remedial Course | % of Undergraduate Students Enrolled in a Math Remedial Course | # of Undergraduate Students Enrolled in Math and English Remedial Course | % of Undergraduate Students Enrolled in Math and English Remedial Course | Total # of Undergraduate Students Enrolled in a Math Remedial Course | Total % of Undergraduate Students Enrolled in a Math Remedial Course |
| FA 2010                        | 4,440            | 3.5%            | 932             | 0.7%            | 5,372            | 4.3%            |
| FA 2011                        | 3,788            | 3.0%            | 871             | 0.7%            | 4,659            | 3.7%            |
| FA 2012                        | 3,520            | 2.8%            | 625             | 0.5%            | 4,145            | 3.3%            |
| FA 2013                        | 3,351            | 2.7%            | 684             | 0.5%            | 4,035            | 3.2%            |
| FA 2014                        | 3,064            | 2.4%            | 710             | 0.6%            | 3,774            | 3.0%            |
| FA 2015                        | 3,062            | 2.4%            | 627             | 0.5%            | 3,689            | 2.9%            |
In regard to undergraduate enrollment and remedial math enrollment at all Alabama public four-year universities from FA 2010 to FA 2015, total undergraduate enrollment has increased by 2.6%. Compare this with a decrease in undergraduate enrollment at AUM over the same time period of 11.8%. Also, the total percent of undergraduate enrollment in a remedial math course has decreased by 32.6%. This compares to a 7.3% increase in the total percent of undergraduate students enrolled in a remedial math class at AUM. The corresponding increase in total undergraduate enrollment and the decrease in total percent of undergraduate students enrolled in a remedial math course at Alabama public four-year universities can be seen in the following graph:

![Graph showing enrollment data]

### Enrollment Data for Alabama Community College System (FA 2010 to FA 2015)

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>98,477</td>
</tr>
<tr>
<td>FA 2011</td>
<td>93,720</td>
</tr>
<tr>
<td>FA 2012</td>
<td>86,871</td>
</tr>
<tr>
<td>FA 2013</td>
<td>85,113</td>
</tr>
<tr>
<td>FA 2014</td>
<td>83,097</td>
</tr>
<tr>
<td>FA 2015</td>
<td>81,912</td>
</tr>
</tbody>
</table>
## Rates of Undergraduate Enrollment in Remedial Math for Alabama Community College System (FA 2010 to FA 2015)

<table>
<thead>
<tr>
<th></th>
<th># of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>% of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th># of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>% of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>Total # of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>Total % of Undergraduate Students Enrolled in a Math Remedial Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>11,398</td>
<td>11.6%</td>
<td>5,742</td>
<td>5.8%</td>
<td>17,140</td>
<td>17.4%</td>
</tr>
<tr>
<td>FA 2011</td>
<td>10,630</td>
<td>11.3%</td>
<td>5,624</td>
<td>6.0%</td>
<td>16,254</td>
<td>17.3%</td>
</tr>
<tr>
<td>FA 2012</td>
<td>9,557</td>
<td>11.0%</td>
<td>4,960</td>
<td>5.7%</td>
<td>14,517</td>
<td>16.7%</td>
</tr>
<tr>
<td>FA 2013</td>
<td>8,768</td>
<td>10.3%</td>
<td>4,799</td>
<td>5.6%</td>
<td>13,567</td>
<td>15.9%</td>
</tr>
<tr>
<td>FA 2014</td>
<td>8,349</td>
<td>10.0%</td>
<td>4,536</td>
<td>5.5%</td>
<td>12,885</td>
<td>15.5%</td>
</tr>
<tr>
<td>FA 2015</td>
<td>7,778</td>
<td>9.5%</td>
<td>4,050</td>
<td>4.9%</td>
<td>11,828</td>
<td>14.4%</td>
</tr>
</tbody>
</table>

In the time period examined, FA 2010 to FA 2015, total undergraduate enrollment at Alabama Community College System institutions has decreased by 16.8%. This is larger than the 11.8% decrease in total enrollment that AUM has experienced in the same time period. For Alabama Community College System colleges, the total percent of undergraduate enrollment in a remedial math course decreased by 17.2%. AUM’s total percent of undergraduate enrollment in a remedial math course increased by 7.3%. The corresponding increase in total undergraduate enrollment and the decrease in the total percent of undergraduate students enrolled in a remedial math course at Alabama Community College System colleges can be seen in the following graph:

### FA 2010 to FA 2015 % of Alabama Two-Year System Students Enrolled in a Remedial Math Course and Total Enrollment

- **Total Undergraduate Enrollment**
- **% of Undergraduate Students Enrolled in a Math Remedial Course**

---

55
Comparison of Undergraduate Enrollment Data and Rates of Undergraduate Enrollment in Remedial Math for Select US News Best Regional Colleges (South) Alabama Public Four-Year Universities (FA 2010 to FA 2015)

**Alabama State University**

**Enrollment Data (FA 2010 to FA 2015)**

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate Enrollment</th>
<th>Graduate Enrollment</th>
<th>Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>4,882</td>
<td>823</td>
<td>5,705</td>
</tr>
<tr>
<td>FA 2011</td>
<td>4,747</td>
<td>682</td>
<td>5,429</td>
</tr>
<tr>
<td>FA 2012</td>
<td>5,130</td>
<td>686</td>
<td>5,816</td>
</tr>
<tr>
<td>FA 2013</td>
<td>5,356</td>
<td>719</td>
<td>6,075</td>
</tr>
<tr>
<td>FA 2014</td>
<td>4,803</td>
<td>707</td>
<td>5,510</td>
</tr>
<tr>
<td>FA 2015</td>
<td>4,764</td>
<td>619</td>
<td>5,383</td>
</tr>
</tbody>
</table>

**Rates of Undergraduate Enrollment in Remedial Math (FA 2010 to FA 2015)**

<table>
<thead>
<tr>
<th></th>
<th># of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>% of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th># of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>% of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>Total # of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>Total % of Undergraduate Students Enrolled in a Math Remedial Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>211</td>
<td>4.3%</td>
<td>167</td>
<td>3.4%</td>
<td>378</td>
<td>7.7%</td>
</tr>
<tr>
<td>FA 2011</td>
<td>194</td>
<td>4.1%</td>
<td>191</td>
<td>4.0%</td>
<td>385</td>
<td>8.1%</td>
</tr>
<tr>
<td>FA 2012</td>
<td>233</td>
<td>4.5%</td>
<td>163</td>
<td>3.2%</td>
<td>396</td>
<td>7.7%</td>
</tr>
<tr>
<td>FA 2013</td>
<td>267</td>
<td>5.0%</td>
<td>163</td>
<td>3.0%</td>
<td>430</td>
<td>8.0%</td>
</tr>
<tr>
<td>FA 2014</td>
<td>145</td>
<td>3.0%</td>
<td>161</td>
<td>3.4%</td>
<td>306</td>
<td>6.4%</td>
</tr>
<tr>
<td>FA 2015</td>
<td>202</td>
<td>4.2%</td>
<td>165</td>
<td>3.5%</td>
<td>367</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

In the time period examined, total undergraduate enrollment at Alabama State University decreased by 2.4%. AUM total undergraduate enrollment has decreased by 11.8%. Alabama State University’s total percent of undergraduate enrollment in a remedial math course has remained roughly stable at 7.7%. AUM’s total percent has increased over the same time period, and is roughly twice the rate of Alabama State University’s rate.
Auburn University at Montgomery

![Graph showing FA 2010 to FA 2015 % of Alabama State Students Enrolled in a Remedial Math Course and Total Enrollment]

Jacksonville State University
Enrollment Data (FA 2010 to FA 2015)

<table>
<thead>
<tr>
<th>Year</th>
<th>Undergraduate Enrollment</th>
<th>Graduate Enrollment</th>
<th>Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>8,100</td>
<td>1,404</td>
<td>9,504</td>
</tr>
<tr>
<td>FA 2011</td>
<td>8,199</td>
<td>1,291</td>
<td>9,490</td>
</tr>
<tr>
<td>FA 2012</td>
<td>7,991</td>
<td>1,170</td>
<td>9,161</td>
</tr>
<tr>
<td>FA 2013</td>
<td>7,588</td>
<td>1,105</td>
<td>8,693</td>
</tr>
<tr>
<td>FA 2014</td>
<td>7,647</td>
<td>1,012</td>
<td>8,659</td>
</tr>
<tr>
<td>FA 2015</td>
<td>7,383</td>
<td>931</td>
<td>8,314</td>
</tr>
</tbody>
</table>

Rates of Undergraduate Enrollment in Remedial Math (FA 2010 to FA 2015)

<table>
<thead>
<tr>
<th>Year</th>
<th># of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>% of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th># of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>% of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>Total # of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>Total % of Undergraduate Students Enrolled in a Math Remedial Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>258</td>
<td>3.2%</td>
<td>127</td>
<td>1.6%</td>
<td>385</td>
<td>4.8%</td>
</tr>
<tr>
<td>FA 2011</td>
<td>239</td>
<td>2.9%</td>
<td>106</td>
<td>1.3%</td>
<td>345</td>
<td>4.2%</td>
</tr>
<tr>
<td>FA 2012</td>
<td>203</td>
<td>2.5%</td>
<td>91</td>
<td>1.1%</td>
<td>294</td>
<td>3.7%</td>
</tr>
<tr>
<td>FA 2013</td>
<td>176</td>
<td>2.3%</td>
<td>72</td>
<td>0.9%</td>
<td>248</td>
<td>3.3%</td>
</tr>
<tr>
<td>FA 2014</td>
<td>169</td>
<td>2.2%</td>
<td>71</td>
<td>0.9%</td>
<td>240</td>
<td>3.1%</td>
</tr>
<tr>
<td>FA 2015</td>
<td>384</td>
<td>5.2%</td>
<td>58</td>
<td>0.8%</td>
<td>442</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

In the examined time period, Jacksonville State University undergraduate enrollment has decreased by 8.9% compared with the 11.8% decrease in AUM’s undergraduate enrollment. After experiencing a decrease in the total percent of undergraduate enrollment in a remedial course from FA 2010 to FA 2014, FA 2015 saw a spike in this number to 6.0%. This led to an overall increase in the total percent of undergraduate...
enrollment in a remedial math class of 25% over the time period examined. AUM experienced an increase of 7.3% in the total percent of undergraduate students enrolled in a remedial math course over the same time period. This increase at Jacksonville State University raises an interesting point for further examination on whether this is an outlier, or a significant trend at that university.
During this time period, Troy University experienced a 24.3% decrease in undergraduate enrollment. This is much greater than the 11.8% decrease in undergraduate enrollment that AUM experienced in the same time period. Troy also experienced a 27.7% decrease in the total percent of undergraduate students enrolled in a remedial math course. In the same time period, AUM experienced a 7.3% increase in the total percent of undergraduate students enrolled in a remedial math course. The interesting fact to note with Troy University over the examined time period is that while overall enrollment has decreased, the percent of students enrolling in a remedial math course has decreased as well. This may indicate an increase in selectivity on the part of Troy University, and may be a topic of further exploration.

### University of North Alabama Enrollment Data

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate Enrollment</th>
<th>Graduate Enrollment</th>
<th>Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>6,247</td>
<td>1,042</td>
<td>7,289</td>
</tr>
<tr>
<td>FA 2011</td>
<td>6,208</td>
<td>1,025</td>
<td>7,233</td>
</tr>
<tr>
<td>FA 2012</td>
<td>6,173</td>
<td>952</td>
<td>7,125</td>
</tr>
<tr>
<td>FA 2013</td>
<td>6,048</td>
<td>944</td>
<td>6,992</td>
</tr>
<tr>
<td>FA 2014</td>
<td>5,883</td>
<td>956</td>
<td>6,839</td>
</tr>
<tr>
<td>FA 2015</td>
<td>6,092</td>
<td>986</td>
<td>7,078</td>
</tr>
</tbody>
</table>
### Auburn University at Montgomery

<table>
<thead>
<tr>
<th>Year</th>
<th># of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>% of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th># of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>% of Undergraduate Students Enrolled in Math and English Remedial Course</th>
<th>Total # of Undergraduate Students Enrolled in a Math Remedial Course</th>
<th>Total % of Undergraduate Students Enrolled in a Math Remedial Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA 2010</td>
<td>88</td>
<td>1.4%</td>
<td>29</td>
<td>0.5%</td>
<td>117</td>
<td>1.9%</td>
</tr>
<tr>
<td>FA 2011</td>
<td>71</td>
<td>1.1%</td>
<td>18</td>
<td>0.3%</td>
<td>89</td>
<td>1.4%</td>
</tr>
<tr>
<td>FA 2012</td>
<td>78</td>
<td>1.3%</td>
<td>27</td>
<td>0.4%</td>
<td>105</td>
<td>1.7%</td>
</tr>
<tr>
<td>FA 2013</td>
<td>39</td>
<td>0.6%</td>
<td>7</td>
<td>0.1%</td>
<td>46</td>
<td>0.8%</td>
</tr>
<tr>
<td>FA 2014</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>FA 2015</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Total undergraduate enrollment at the University of North Alabama has decreased 2.5% from FA 2010 to FA 2015. This compares with the 11.8% decrease in undergraduate enrollment at AUM. The total percent of undergraduate enrollment in a remedial math course has decreased 100% from 1.9% to 0%. At AUM the total percent of undergraduate enrollment in a remedial math course has increased 7.3%.

One interesting fact to consider is the lack of any students enrolled in remedial math in FA 2014 or FA 2015. Upon examination of the FA 2017 University of North Alabama undergraduate course schedule, it was discovered that no remedial math courses were offered. MA 100, Intermediate Algebra is “required of all students who require MA 112 Pre-Calculus Algebra, but who score 16-21 on the ACT Math sub-test”. MA 100E, Intermediate Algebra Enhanced, is “required of all students whose major requires MA 112 and whose score is 15 or below on the ACT Math subtest.” MA 100E is a four hour course that includes a lab component. (University of North Alabama 2017 Undergraduate Course Catalog)
Conclusions

When examining the data in regard to undergraduate enrollment and total percent of undergraduate students enrolled in a remedial math course, there are several trends that stand out.

1.) Except when all Alabama public four-year universities are examined as a whole, the undergraduate enrollment at institutions has trended downward from FA 2010 to FA 2017. The entire Alabama Community College System (ACCS) and the four-year universities when examined individually all show a downward enrollment trend. This down trend ranged from a high of a 24.3% decrease during the period at Troy University, to a low of 2.4% at Alabama State University.

2.) For the most part, the total percent of undergraduate students enrolled in a remedial math course has been trending down as well. For instance, when examined together, all Alabama public four-year universities saw a 32.6% decrease in undergraduate remedial math course enrollment. The ACCS saw a 17.2% decrease. When looking at individual universities, the University of North Alabama had the highest decrease in remedial math course enrollment at 100%, but this may be a statistical anomaly due to the apparent phasing out of remedial math courses at the university. Two better examples for study would be Troy University, which saw a 27.7% decrease from FA 2010 to FA 2015 and Jacksonville State University, which saw a 25% increase in the same time. Jacksonville State University's may be an anomaly since the majority of that increase came in FA 2015.

3.) Aside from Alabama State University which saw its rate of remedial math course enrollment remain roughly the same, and Jacksonville State University which saw a rapid rise in its remedial math course enrollment over the course of one year, AUM was the only university examined in this report that saw a decrease in undergraduate enrollment and an increase in the number of undergraduate students enrolled in a remedial math course. This would seem to indicate that this is an area that could be re-worked in order to provide more support for AUM’s students.
Appendix 2

Summary of AUM’s current Developmental Math Placement Policy

At Auburn University at Montgomery, the courses of MATH 0700/0701-Elementary Algebra and MATH 0800/0801-Intermediate Algebra constitute the scope of the remedial/developmental math sequence at the university. If a student is unable to satisfy one of the prerequisites for placement in college-level math, then that student will have to complete either one or both of the remedial math courses. Placement in either of these courses is based on a student’s performance on either the ACT or SAT mathematics subtest. The Department of Mathematics and Computer Science has an established policy that the scores on these tests do not expire.

In the event that a student does not have an ACT or SAT score, the student will be required to take the department’s Math Placement Test (MPT), which will determine placement in the appropriate mathematics course. The MPT that AUM utilizes is Pearson’s "My Math Test," an adaptive math test that identifies a student’s areas of weakness. This test has been customized by AUM to closely match the coursework that a student would have taken at a particular level of math. For instance, if a student takes the MPT and places into MATH 0800/0801, their test score and placement level would indicate that they are proficient in the coursework that the student would have taken in 0700/0701. If a student has either an ACT or SAT score, the student is not allowed to challenge their placement by taking the MPT, nor can a student take the MPT more than once.

Placement in remedial math is based on the following prerequisites:
<table>
<thead>
<tr>
<th>Course</th>
<th>ACT/SAT Minimum Score Prerequisite</th>
<th>Minimum Math Placement Test Score Prerequisite</th>
<th>Minimum Course Credit Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0700/0701-Elementary Algebra</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>MATH 0800/0801-Intermediate Algebra</td>
<td>ACT Math: 18 OR SAT Math: 440</td>
<td>At least Level 2</td>
<td>C# in MATH 0700</td>
</tr>
</tbody>
</table>

If a student is placed in MATH 0700/0701, a passing grade of 70 is required to register for MATH 0800. In addition, for a student to pass MATH 0800/0801, a passing grade of 70 is required. Finally, based on a student’s ACT or SAT score and MPT score, the student may be required to take and pass both MATH 0700/0701 and MATH 0800/0801 prior to enrolling in their appropriate 1000-level core math class.
APEKS

An Overview to APEKS Reports

APEKS offers a variety of automated reports that provide you with detailed information on student usage and learning. These dynamic reports will greatly help you to easily monitor progress, deliver data-driven instruction, and incorporate APEKS into the grading system. For detailed information on each report, please contact your local McGraw-Hill Consultant or APEKS Implementation Specialist.

Basic Instructor Module
Instructors can access reports from the Basic IM after selecting a class and then selecting the Reports tab.

Advanced Instructor Module
Instructors can access reports from the Advanced IM after selecting a class and then selecting the Reports tab. Clicking on a report icon will allow the instructor to generate a class report. To run a report for an individual student, first select the student’s name from the right-hand panel, and then select the report icon.

APEKS Pie Report shows average learning and can be used to direct instruction and group students based on topics they are currently ready to learn.

Progress Bar Report shows overall student progress and average learning rates. It can be used to monitor progress and identify students who may need intervention.

Time and Topic Report shows a daily breakdown of how students are spending their time in APEKS. It can be used to monitor time on task and student learning patterns.

Knowledge Per Slice Report shows a breakdown of student progress for each slice of the APEKS Pie (or Objectives if they are used) and can help monitor progress.

Assignments Report shows the results of automatically-graded APEKS assignments, which include Homework, Quizzes, and Tests.

Custom Reports allow you to mix and match data from the existing APEKS reports to create your own custom report.
Appendix 4

QEP Town Hall Meeting #2
November 9, 2015

Circle the TEN (10) QEP ideas that you think should make it to the next step. Only circle ten (10). If you think two should be combined, circle them both, but they count as two votes.

- Math Literacy
- Financial Literacy
- Math and Financial Literacy
- UNIV 2000
- Communication Skills
- Interpersonal Skills
- Presentation Skills
- Social Competency
- Debate Across the Curriculum
- Critical Thinking/Logic
- Metacognition
- Research Skills
- Information Literacy
- Undergraduate Research
- Statistical Literacy
- Technology/Computer Literacy
- Career Planning
- Job Placement Strategies
- Leadership
- Social Media and Professional Accountability
- External Mentor Program (outside the university)
- Team-Based Learning
- Veterans' Services
- Service Learning
- Ethics
- Plagiarism
- Wellness (mental and Physical)
- Movement and Learning
- Creating a “one stop shop” for Student Services
- Global Competency
- Foreign Languages and Cultures
- Diversity and Cultural Competency
- Study Abroad
- Better Services for International Students
- History Taught with Current Events
- Quality Online Learning
- Environmental Science (Carbon footprints and food politics)
- Mentorship Programs
- Freshman/Basic College Survival Skills
- Expanding the Learning Center
- Expanded faculty development
- Greater Collaboration between Colleges/Departments/Faculty
- Academic Rigor with Market Relevance (data collection on graduates, new programs, etc.)
- Revising the Meal Plan
Session Title: QEP
Facilitator: Cara Mia Braswell
Date: [Date]

Please take a moment to fill out this training evaluation. Your feedback will help guide us in what we can do to make this experience more beneficial. Thank you for your time.

1. How effective was the content of this lesson:
   Not at all 1 2 3 4 Completely 5

2. Training class format:
   Useless 1 2 3 4 Very relevant 5

3. Training class organization:
   Disorganized 1 2 3 4 Very Organized 5

4. How would you rate the facilitator/trainer?
   Poor 1 Fair 2 Good 3 Excellent 4 Outstanding 5

FLIP OVER

5. Did the facilitator cover what he/she said they would cover in this training session? ☑ Yes ☐ No

6. What is the one thing that you learned in this session that you will implement in your own teaching?
   [Write your answer here]

7. Can we follow up with you about how the implementation of this topic worked?
   If so, please complete the information below.
   Name: [Name]
   Dept.: [Department]
   Email: [Email]

Questions/Concerns: [Please attend Sept 1st 9-10 a.m.
   Fac/Staff Only]

“Quality Matters” Social Excellence Diversity Respect
SAVE THE DATES

Friday, September 25, 2015 | Understanding the QEP
  Information Session
  11:30-1:30 >> East Room, Library Tower (Lunch served)

Thursday, October 8, 2015 | Town Hall Meeting
  Talk about ideas
  1:00-2:00 >> East Room, Library Tower

October 12 - 26, 2015 | Qualtrics Survey to Submit Ideas

Monday, November 9, 2015 | Town Hall Meeting, Part II
  Narrowing down the options
  2:30-3:30 >> Godwyn Hall 109

November 30 - December 14, 2015 | Qualtrics Vote to Determine QEP

CELT  SACS  COC
Quality Enhancement Program Selection Process

Lee Farrow
Sun 10/4/2015 4:23 PM

To: AUM Employee Mailing List <employees@aum.edu>

Dear AUM Faculty and Staff,

As most of you know by this point, AUM is preparing for its next visit by SACSCOC (formerly, SACS) and this means that we need to come up with a new Quality Enhancement Program (QEP). Our last QEP was Writing Across the Curriculum (WAC) and that program has proven to be successful and is now a permanent part of our curriculum. Now, AUM must decide on a new QEP.

CELT has been asked to facilitate this process by holding meetings to explain the QEP process, collecting ideas and responding to requests for data. SACSCOC requires that universities get as much input as possible in this process. To this end, CELT has already held three informational sessions (June 11, July 1, September 25) in which Cara Mia Braswell from the Office of Institutional Effectiveness has explained the QEP expectations, shared examples from other universities, and asked for data requests.

Last week, I met with all the department heads/chairs, and per their request, I emailed them a link to a collection of data on AUM’s student body; I asked them to share it with anyone who was interested. If you would like to see this information, please talk to your department head/chair. (The link was not sent out to the whole campus because there were some concerns about confidentiality issues and student information contained within the data, but anyone can get access by request with ITS.)

I will be sending out more data and it becomes available to me.

Our next meeting is on this Thursday, October 8, 1:00-2:00 p.m., Library Tower East. Please attend this meeting if you can; we need to move this process forward and will need to begin to narrow down the idea pool by the end of the semester.

Here are the next steps in the process:

October 8 – Town Hall Meeting – 1-2 pm, Library East - more idea gathering
October 12-26 – Qualtrics survey to submit ideas
November 9 – Town Hall Meeting Part II – Narrowing Down the Options
November 30-December 14 – Qualtrics Vote to Determine the QEP Finalists
February 2016 – Qualtrics Vote on QEP

Thanks,
Lee Farrow
More AUM Data

Lee Farrow

Mon 10/5/2015 8:44 AM

To: AUM Employee Mailing List <employees@aum.edu>

All,

Below is more data from the Office of Institutional Effectiveness for your consideration as we discuss what AUM’s next QEP will be. The explanations and comments with these links are those sent by OIE.

Thanks,
Lee

A. At this link you will see gender/ethnicity/age make-up:


B. The link above is our latest report but other years are on our web page:

http://www.aum.edu/academics/institutional-effectiveness/institutional-research/aum-data

C. Here is a report of retention by gender/ethnicity. Typically we look at first year and graduation after six years. However, you can see where the largest drop off is occurring:

http://www.aum.edu/docs/default-source/OIE/csrde_aum-(2).pdf?sfvrsn=2

D. In our Noel Levitz Satisfaction (2011) results the following links reveal potential weaknesses

The scales can be examined in terms of differences in Mean comparisons - or the Gap between importance and satisfaction. In comparison to our peers who participate in Noel Levitz, our students are more satisfied. Looking further for challenges of our students: There is a gap difference (>1) between Importance and Satisfaction for "Recruitment and Financial Aid", "Registration Effectiveness" and "Safety and Security".

At the following link these challenges are listed:

34. I am able to register for classes I need with few conflicts.
66. Tuition paid is a worthwhile investment.
69. There is a good variety of courses provided on this campus.
17. Adequate financial aid is available for most students.
47. Faculty provide timely feedback about student progress in a course.
27. The personnel involved in registration are helpful.
4. Admissions staff are knowledgeable.
36. Security staff respond quickly in emergencies.
21. The amount of student parking space on campus is adequate.
59. This institution shows concern for students as individuals.
12. Financial aid awards are announced to students in time to be helpful in college planning.
5. Financial aid counselors are helpful.
57. I seldom get the "run-around" when seeking information on this campus.
11. Billing policies are reasonable.
19. My academic advisor helps me set goals to work toward.
35. The assessment and course placement procedures are reasonable.

E. The following link is our graduate survey shows very positive results - including income:

Weaknesses note: The lowest level of satisfaction was with career advising (73.7%) for undergraduates. Similar scores were reported for graduate students - scored both program advising and career advising lower than other items (74.3% and 73.8% somewhat satisfied or very satisfied with their experiences, respectively).

Over one-third (37.8%) of these students said that they participated in an internship activity and Auburn University at Montgomery

The lowest agreement with satisfaction (84%) with AUM undergraduate experience was "helped use information technology to enhance your intellectual or professional pursuits".

Finally there seems to be a fairly low amount of activities designed to enhance educational experiences or to provide a culminating experience - such as internship, practicum, service learning, etc.

F. Turning to NSSE Data

http://www.aum.edu/docs/default-source/OIE/mean-comparisons.pdf?sfvrsn=2

First later results will be posted soon (2010 is online).

Looking at senior results and negative Effective Size - Greater attention could be paid to 1b - Making a class presentation 1s - Working with faculty members on activities other than coursework 1v - Having serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values 6a - attending creative performances 6b - exercising or participating in physical fitness activities Many challenges are
QEP Ongoing Report

June 11, 2015 – First QEP Informational Session – primarily administration attended

June 26, 2015 – Retention Committee Meeting – asked for QEP suggestions

- Quest for Quality in Online Programs
- Formal process and funds for faculty to access more professional development opportunities to improve teaching
- Enhance and expand and support (financially/institutionally) study abroad
- Speaking skills, Socratic method via debate team; oral communication skills
- mandatory research skills course that stresses critical thinking
- Reading comprehension course; reading comprehension skills
- financial literacy and math skills
- career and job search skills/experience, student portfolio
- mentorship program between students and faculty/staff
- advising week for campus
- peer advisor/academic coach program
- capstone leadership for rising juniors and/or seniors before they enter the workforce
- academic honesty, AUM Honor Code
- meal plan option with dining dollar at Eastchase, Whole Food, etc. (places on Warhawk Transit route)

July 1, 2015 – Second QEP Informational Session

- math, or math and financial literacy
- social competency
- Presentation skills
- research with faculty member
- metacognition
- college literacy
- critical thinking
- Math Across the Curriculum
- Computer and Digital Literacy
September 25, 2015 – Third QEP Informational Session
- leadership
- service learning
- classroom to career
- statistical literacy
- mental health/coping with anxiety/stress
- diversity
- globalization skills
- cultural competencies
- international students and logistics
- ethical learning/ethics
- expanding Learning Center and tutoring for students

October 2, 2015 – Meeting with Department Heads
- create a “one stop shop” for student services (tutoring, disability, counseling)
- wellness (physical and mental)
- mental health – need expanded hours for Counseling Center (24/7 staff)
- collaboration between colleges/depts./faculty
- veterans’ services
- External mentors – outside the university

Next Steps: October 12-26 – Qualtrics survey to submit ideas
November 9 – Town Hall Meeting Part II – Narrowing Down the Options
November 30-December 14 – Qualtrics Vote to Determine the QEP Finalists
January – more data gathering on finalists
February – Vote on Single QEP

December 2017 - QEP submitted
More QEP Info

Lee Farrow

Wed 10/21/2015 11:09 AM

To: AUM Employee Mailing List <employees@aum.edu>;

1 attachment
LC.ISL yearly report 2014_2015.pdf;

All,

I apologize for the numerous emails, but it is important to the selection process for our next QEP that we get as much campus involvement as possible, and that means making information, meetings, and data available to everyone in as many venues as possible.

Attached is a usage report on the Learning Center, as requested.

The QEP Qualtrics survey is open for another six days. Please go in and give your opinion on what our next QEP should be. This is the link - https://aum.co1.qualtrics.com/SE/?SID=SV_bdu9He6i3S5Sar3

Today, October 21st, I am meeting with the SGA and other students to get their input on what our next QEP should be.

On November 9, 2015, at 2:45 pm, in GH 109, we will hold Town Hall Meeting #2 – Narrowing Down the Topics. At that time, I will present all the ideas that have been submitted (in all meetings and surveys) and we will discuss these ideas and narrow the list down to ten. Those present will vote for their top ten, and then I will send the broad list out as a Qualtrics survey so those who could not attend can vote for their top ten as well.

In the month of November, I will work with OIE to find examples from other institutions and relevant data on these ten ideas. This information will be made available for the Qualtrics survey from November 30 – December 14, 2015 to determine the top 3 ideas. Students will be allowed to vote as well, in a separate survey. Faculty and staff will be asked to submit their names if they are willing to work on a short-term committee to “make a case” for their preferred QEP in a short (3-4 pp.) white paper – that white paper will be due February 10. The three ideas selected will be announced immediately and the ideas’ respective advocates will be asked to begin working on white papers.

The remainder of the process is as follows:

January 2016 – White paper teams at work; OIE assists them as needed.
February 10, 2016 – Three QEP white papers due; Top three QEP ideas go up on website with white papers.
February 22-26, 2016 – Vote – AUM employees only – QEP topic is selected.
March 2016 – Invite campus to form committees to begin concrete planning – each comes up with a QEP execution plan.
April 2016 – Plans due by end of April.
May 2016 – Before graduation – three plans put to vote - QEP Execution Plan selected.
Summer 2016 – New QEP Team takes over the process.
Fall 2016 – First Draft of fully fleshed-out QEP Plan Due.

Thanks for your attention.

Lee