**Unit Strategic Plan 2016 - 2018**

# Name of Program/Department: Mathematics, Engineering, and Physical Science—Shelby Campus Mission Statement (for the program or department):

The Department of Mathematics/Engineering/Physical Sciences offers a broad range of courses that service the career programs of the college and that will transfer to baccalaureate degree granting institutions. The department also offers developmental mathematics courses to prepare students for college-level mathematics.

# The Department Will:

* provide freshman and sophomore-level course work that meets or exceeds the standards of public institutions of higher learning.
* offer an innovative remedial mathematics program accommodating various skill levels.
* develop and provide courses relevant to the career and professional degree programs of the college.
* prepare students with strong content knowledge in chemistry and physics with emphasis on critical thinking and problem solving skills, which will allow them to meet career goals.
* offer transferable courses in astronomy and physical science that will meet general education requirements in science.
* ensure supplementary student support through audiovisual materials and tutorial services.
* provide academic advising to students with engineering majors and general studies

# Summary of Access, Productivity and Effectiveness (Including, but not limited to, program load, success rate, retention rate, completion rate, employer surveys, student surveys):

A comparison of the 2013-2014 and 2014-2015 academic year enrollment numbers indicate a 15% decrease for the Shelby Math, Engineering, and Physical Sciences Department. This decline is reflective of an overall drop in enrollment at Jefferson State Community College and throughout the system. This notable change can be contributed to changes in the distribution of Pell Grant funds. However, particular classes did show a percent increase in enrollment between the two academic years (**Chart 2**).



Table 1. 2014-2015 Enrollment in Math Courses by Instructional Format

Table 2. 2014-2015 Enrollment in Physical Science Courses by Instructional Format



Table 3. 2014-2015 Enrollment in Chemistry Courses by Instructional Format



**Internal Conditions:**

* 1. **Technology**

All faculty received new computers by the end of 2013-2015 the planning cycle. The only expectation is that the equipment be maintained with the appropriate upgrades when necessary.

# Budget

The budget for classroom and office supplies for the department is currently sufficient.

# Staffing

The Math, Engineering, and Physical Science Department employs six full-time instructors that cover both math and chemistry courses. The department also shares and office manager with the Liberal Arts Department. On average, the department employs eighteen adjunct instructors during the fall and spring semesters and nine during the summer. Both chemistry and math maintain a faculty ratio in which full-time instructors are assigned to more than half of the courses sections within the department **(Tables 4 and 5)**. However, physical science course sections **(Table 6)** are assigned to more adjunct instructors than full-time. If this trend continues, it may be prudent to consider shifting more sections to qualified full-time faculty.

**Table 4. Math Credit Hour Production Based on Faculty Status**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Full-Time*** | | | | **Part-Time** | | | | **Total** | |
| ***Sections*** | ***Enrolled*** | ***Credit Hr. Production*** | ***Credit Hr, %*** | **Sections** | **Enrolled** | **Credit Hr. Production** | **Credit Hr. %** | **Total Number of Sections** | **Total Credit Hr. Production** |
| ***92*** | ***2,816*** | ***8,651*** | ***66.8%*** | **52** | **1,419** | **4,307** | **33.2%** | **144** | **12,958** |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Full-Time*** | | | | **Part-Time** | | | | **Total** | |
| ***Sections*** | ***Enrolled*** | ***Credit Hr. Production*** | ***Credit Hr, %*** | **Sections** | **Enrolled** | **Credit Hr. Production** | **Credit Hr. %** | **Total Number of Sections** | **Total Credit Hr. Production** |
| ***10*** | ***224*** | ***896*** | ***74.7%*** | **3** | **76** | **304** | **25.3%** | **13** | **1200** |

**Table 5. 2014-2015 Chemistry Credit Hour Production Based on Faculty Status**

**Table 6. 2014-2015 Physical Science Credit Hour Production Based on Faculty Status**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Full-Time*** | | | | **Part-Time** | | | | **Total** | |
| ***Sections*** | ***Enrolled*** | ***Credit Hr. Production*** | ***Credit Hr, %*** | **Sections** | **Enrolled** | **Credit Hr. Production** | **Credit Hr. %** | **Total Number of Sections** | **Total Credit Hr. Production** |
| ***5*** | ***166*** | ***664*** | ***47.3%*** | **7** | **185** | **740** | **52.7%** | **12** | **1,404** |

# Resources

Several resources are available to faculty members for professional development. These resources include professional organizations, publisher-supported seminars/webinars, Alabama Community College System sponsored events, and Jefferson State library supported resources. Funding to cover registration for the Alabama Community College Association annual conference has been covered by the college and the Department respectfully requests that this funding continue.

# Enrollment

Enrollment numbers have decreased, and this enrollment trend is occurring not only at the college level but state and national level as well. The cause is primarily due to changes in the Pell Grant funds **(see Charts 1 & 2)**.

# Facilities

Classrooms, computer labs, and office space are all currently sufficient to meet the department’s needs. The majority of the math, chemistry, and physical science courses are taught in the Math Science Building. However, some classes are taught in the Health Science Building when necessary.

# Equipment

All major faculty and classroom equipment was replaced during the last planning cycle. This equipment will need to be maintained to ensure all software is upgraded on a regular basis.

# External Conditions (such as state funding, accrediting agencies, advisory committees, postsecondary policy changes):

All courses within the department are regulated by the Alabama Community College System central office. A statewide syllabus and competencies are established for every course. The competencies are reviewed and updated as changes occur.

**2013-2014 Accomplishments:**

* **Corey Kline, Stella Langley, and Liesl Harris** - members of the college’s Quality Enhancement Plan (QEP) implementation committee.
* **Stella Langley-** serves as the co-chair for the QEP leadership team. She also serves as a college representative for the Vertical Teaming Initiative.
* **Lisa Nagy** -serves as the current chairperson of the American Chemical Society of Alabama.
* **Margaret Thrasher**- implemented new pedagogy for factoring in Mth 098. She plans to develop ancillary materials to better assist her students with this technique.
* **Yuing Hargett**- explored the use of proctoring service to better serve her online students. After careful considerations, she concluded that onsite class meeting would maintain the integrity of the course.
* **Konstatinos Theodorou**- headed the development of the SLO’s for the MTH- 100, MTH-116, and MTH-265 courses

**2014-2015 Accomplishments**

* **Yuing Hargett** - Ms. Hargett participated in the Enhanced WebAssign Technology Power User Summit held in Boston, Massachusetts from October 2-3, 2014. She used the knowledge she gained at the conference to host a very informative faculty workshop. The workshop was very well attended, and a few instructors that had not previously used the technology in the classroom implemented WebAssign in their courses the following semester.
* **Corey Kline –** Mr. Kline participated in a webinar entitled “Another Look at the Challenges of Teaching and Learning Infinite Series in Calculus”. The webinar allowed him to learn more about the latest research, teaching and learning strategies to improve student understanding and performance in Calculus.
* **Dr. Lisa Nagy –**  Dr. Nagy served as the 2014 Chair of the Alabama Local Section of the American Chemical Society. She also attended the 2015 American Chemical Society national meeting in Denver, CO in March of 2015. Her service as a chairperson and active participation in the national organization enables her to be a valuable resource for both full-time and part-time instructors. More importantly, she stays abreast of innovative teaching pedagogy.

**Unit Goals for 2016-2017**

**Goal 1: Enhance the teaching and learning process for math students through the purchase of new technology.**

**Objective:**

1. Improve methods of formal and ad hoc classroom lecture recordings.
2. Establish a High Definition library that would serve as online tutorials for all math students.

**Method of Assessment:**

Faculty and students would provide qualitative feedback about their experiences using the technology both in and out of the classroom. Quantitative data could be obtained by conducting a pilot study that compared students who accessed and used the online tutorials versus those that did not use the online tutorials as supplemental instruction.

**Additional Funds Requested**

Math faculty have requested the purchase of Apple I-pads, Berm Kickstand Portable Projector, and associated applications.

* + Apple IPad Air 2 128GB - $699
  + Bēm Kickstand Portable Projector - $499.95
  + Presentation Recorder App - $3.99
  + UPAD App - $4.99
  + Educreations App = $99
  + Total $1,306.93 X 8 = **$10,455.44**

By providing students with an external supplemental resource they can receive additional support that will help them acquire math content knowledge.

**Goal 2**: **Provide professional developmental opportunities for the integration of course technology in the classroom.**

**Objective:**

Increase the number of instructors using comprehensive subject-based course management tools by providing training and support for faculty interested in incorporating additional technological resources in the classroom.

**Method of Assessment**

Faculty will provide feedback after attending workshops. Also, the division chair will monitor the number of faculty using the course management tools to enhance student learning.

**Request for Additional Funds**

No additional funds requested

**Goal Four: Purchase new equipment to enhance laboratory instruction and dispose of chemical waste from labs.**

**Objectives:**

1. Remove chemical waste to prevent buildup of toxic material and ensure that items are disposed of properly.
2. Purchase of a new analytical balance to replace old and worn balance.

**Methods of Assessment**

1. The waste disposal pick up will be initiated and monitored by both the lead chemistry instructor, and lab coordinator, Lisa Nagy and Preston Wallace, respectively.
2. Several chemistry laboratory exercises require the use of analytical balance. The current balance is old and does not give accurate results. For students to gain the full benefit of the laboratory exercises, it is necessary that this piece of equipment to work properly. More accurate laboratory exercise results, as well as feedback from the instructors and students, will be used as a method of assessment.

**Additional Funding Requests**

1. Waste Disposal Pick up for all campuses

Tradebe (waste disposal company) – estimated cost $2000.00

1. Analytical Balance- Mettler Toledo New Classic MS Analytical Balance

Fisher (Model # 01-910-200) @ $3822.00

# Unit Goals for 2017-2018

**Goal 1:** Increase the number of department math tutors.

**Objective:** Increase opportunities for students enrolled in any math course to receive free tutoring by a qualified individual employed by the department.

**Method of Assessment:**

* Tutoring login sheets will provide information about the number of students seeking help. A satisfaction evaluation can be created and given to students to help gauge their experiences with the tutor.

**Additional Funds Requested:**

* $1500/6 hours of tutoring
* The Department is requesting minimally one additional tutor to help meet the needs of students that take evening, classes.

**Goal 2: Provide training to faculty members as the college prepares to implement its QEP, which focuses on remedial math courses**

**Objective:** Create a symposium or other training avenue to train instructors on proper methods and strategies for implementing math 098S and math 100S in conjunction with the QEP pilot courses.

**Method of Assessment**: Working closely with the QEP full time instructor and other committee members, the math department will formulate a training plan (ideally for both fulltime and part-time instructors) on methods of improving teaching and promoting student success in developmental math classes.

**Additional Funding**: The estimated funding for this symposium is $5,000.00. This estimate could change based upon feedback received from the QEP Implementation Committee. Any adjustments will be reported during the midterm goals progress reporting period.