**Unit Strategic Plan 2017 - 2019**

# 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 2015-2016 and 2016-2017 academic year enrollment numbers show a 5% overall decrease in math course enrollment. However, results for specific courses (MTH 110, MTH 113, MTH 120) reveal increases in enrollment (Chart 1 and 2). Enrollment data from both Physical Science and Chemistry, show enrollment increases of 4% and 7%, respectively.

Table 1. 2015-2016 Enrollment in Math Courses by Instructional Format

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Traditional** | | | **Method** | **VIDEO** | | | **Method** | **Internet** | | | **Method** | **Yearly Total** |
| **F** | **SP** | **SU** | **Total** | **F** | **SP** | **SU** | **Total** | **F** | **SP** | **SU** | **Total** |
| **MTH 090** | **141** | **73** | **19** | **233** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **233** |
| **MTH 098** | **377** | **241** | **59** | **677** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **677** |
| **MTH 100** | **415** | **321** | **118** | **854** | **0** | **0** | **0** | **0** | **147** | **141** | **104** | **392** | **1246** |
| **MTH 110** | **14** | **17** | **20** | **51** | **0** | **0** | **0** | **0** | **30** | **37** | **35** | **102** | **153** |
| **MTH 112** | **211** | **233** | **94** | **538** | **0** | **0** | **0** | **0** | **70** | **70** | **71** | **211** | **749** |
| **MTH 113** | **40** | **58** | **25** | **123** | **0** | **0** | **0** | **0** | **22** | **24** | **39** | **85** | **208** |
| **MTH 116** | **14** | **9** | **0** | **23** | **0** | **0** | **0** | **0** | **31** | **22** | **18** | **71** | **94** |
| **MTH 120** | **0** | **11** | **15** | **26** | **0** | **0** | **0** | **0** | **18** | **0** | **26** | **44** | **70** |
| **MTH125S** | **48** | **35** | **49** | **132** | **0** | **0** | **0** | **0** | **14** | **0** | **42** | **56** | **188** |
| **MTH126S** | **0** | **0** | **0** | **0** | **17** | **21** | **18** | **56** | **0** | **0** | **0** | **0** | **56** |
| **MTH 227** | **0** | **0** | **0** | **0** | **0** | **12** | **15** | **27** | **0** | **0** | **0** | **0** | **27** |
| **MTH 238** | **0** | **0** | **0** | **0** | **0** | **0** | **16** | **16** | **0** | **0** | **0** | **0** | **16** |
| **MTH 265** | **0** | **0** | **0** | **0** | **13** | **0** | **0** | **13** | **37** | **80** | **73** | **190** | **203** |
| **TOTAL** | **1260** | **998** | **399** | **2657** | **30** | **33** | **49** | **112** | **37** | **374** | **408** | **1151** | **3920** |

Table 2. 2015-2016 Enrollment in Physical Science Courses by Instructional Format

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Traditional** | | | **Method** | **VIDEO** | | | **Method** | **Internet** | | | **Method** | **Yearly Total** |
| **F** | **SP** | **SU** | **Total** | **F** | **SP** | **SU** | **Total** | **F** | **SP** | **SU** | **Total** |
| **PHS 111** | **39** | **24** | **16** | **79** |  |  |  | **0** | **101** | **68** | **0** | **169** | **248** |
| **PHS 112** | **0** | **0** | **0** | **0** |  |  |  | **0** | **0** | **20** | **18** | **38** | **38** |
| **TOTAL** | **39** | **24** | **16** | **79** |  |  |  | **0** | **101** | **88** | **18** | **207** | **286** |

Table 3. 2015-2016 Enrollment in Chemistry Courses by Instructional Format

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Traditional** | | | **Method** | **Internet** | | | **Method** | **Hybrid** | | | **Method** | **Yearly Total** |
| **F** | **SP** | **SU** | **Total** | **F** | **SP** | **SU** | **Total** | **F** | **SP** | **SU** | **Total** |
| **CHM 104** | **25** | **30** | **22** | **77** | **0** | **31** | **42** | **73** | **0** | **0** | **0** | **0** | **150** |
| **CHM 111** | **30** | **31** | **44** | **105** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **105** |
| **CHM 112** | **25** | **12** | **31** | **68** | **0** | **0** | **0** | **0** | **0** | **14** | **0** | **14** | **82** |
| **TOTAL** | **80** | **73** | **97** | **250** | **0** | **31** | **42** | **73** | **0** | **14** | **0** | **14** | **337** |

**Internal Conditions:**

* 1. **Technology**

All have access to technology in the classroom and in their offices. Although all faculty received new computers in their offices during the 2013-2014 academic year, the department will continue to request upgrades for laptops/tablets.

# 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 20 adjunct instructors during the fall and spring semesters and ten during the summer. Both chemistry and math maintain a faculty ratio in which full-time instructors are assigned to more than half (66%) of the courses sections within the department **(Tables 4 and 5)**. However, physical science historical offers one to two more sections **(Table 6)** to adjunct instructors compared to full-time.

**Table 4. 2016 -2017 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** |
| ***90*** | ***2,503*** | ***7,754*** | ***66.9%*** | **48** | **1260** | **3,832** | **33.1%** | **138** | **11,586** |

**Table 5. 2014-2015 Chemistry 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** |
| ***13*** | ***297*** | ***1,188*** | ***75%*** | **4** | **99** | **396** | **25.0%** | **17** | **1,584** |

**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*** | ***134*** | ***536*** | ***47.9%*** | **6** | **146** | **584** | **52.1%** | **11** | **1,204** |

# 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 in mathmatic courses but increased in chemistry and physical science. **(see enrollment data)**.

# 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 2013-2014 budgetary year. This equipment will need to be maintained to ensure all software is upgraded on a regular basis. However, due to age, some projectors in classrooms will need to be replaced during the 2017-2018 academic year.

# 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.

**2015-2016 Accomplishments:**

* **Corey Kline** – Attended Strategies for Adaptive Learning training session sponsored by Pearson Publishing.
* **Stella Langley, Yu-ing Hargett, Magaret Thrasher and Konstatinos Theodorou -** Attended the annual Alabama Community College Association conference.
* **Lisa Nagy** - Attended the American Chemical Society annual conference meeting in San Diego, CA.

**2016-2017 Accomplishments:**

* **Margaret Thrasher** – Participated in online webinar, “Effectively Differentiating Mathematics Instruction to Help Struggling Student”.
* **Corey Kline –** Mr. Kline participated in Diversity and Inclusiveness and Cultural Responsive Teaching at the University of Alabama, Tuscaloosa.
* **Dr. Lisa Nagy –** Attended the American Chemical Society annual conference meeting in San Francisco, CA.
* **Stella Langley, Yu-ing Hargett, and Konstatinos Theodorou -** Attended the 2016 Alabama Community College Association conference.

**Unit Goals for 2017-2018**

**Goal 1: Hire additional support staff to assist in transcription of videos to ensure online course materials are ADA compliant.**

**Objective:**

Instructors who teach online and hybrid courses record hundreds of hours of lecture to provide students with beneficial learning resource. Traditionally, these courses utilize Tegrity© or other video resources provided by book publishers. However, the videos do not have closed caption capabilities for the hearing impaired. In an effort to continue to utilize videos in non-traditional courses, it is necessary to ensure previously recorded and future materials are ADA compliant. The task of transcribing videos is laborious and expensive when outsourced. Additionally, faculty who have numerous videos need assistance to do the work and reevaluate the transcription. Therefore, the department is requesting a L-19 who can assist with this task.

**Method of Assessment**:

Faculty will work with the assistant to evaluate the accurateness of the trascription.

**Additional Funds Requested**:

Salary to support an L-19

**Goal 2: Dispose of chemical waste from chemistry laboratories.**

**Objective:**

Remove chemical waste to prevent buildup of toxic material and ensure that items are disposed of properly.

**Methods of Assessment**

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.

**Additional Funding Requests**

Waste Disposal Pick up for all campuses

Tradebe (waste disposal company) – estimated cost $2000.00

**Goal 3:** 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:**

The Department is requesting minimally one additional tutor to help meet the needs of students that take evening, classes.

* $1500/6 hours of tutoring

**Goal 4: Provide a laboratory classroom environment that has the appropriate number of** materials to support an effective hands-on experience.

**Objective:**

Increase the number of Vernier stations in chemistry laboratory.

**Method of Assessment:**

Instructors will assess student learning through laboratory exercise and test.

**Additional Funds Requested:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Item** | **Catalog #** | **Fisher Catalog #** | **Description** | **Qty** | **List Price** | **Extended** | **Used in CHM** |
| **1** | **LABQ2** | **S15974ND** | **LabQuest 2 Data Collection Interface** | **2** | **$329.00** | **$658.00** | **111 112 221 222** |
| **2** | **COL-BTA** | **S16008ND** | **4-Wavelength Colorimeter** | **6** | **$115.00** | **$690.00** | **111 112 222** |
| **3** | **ORP-BTA** | **S16044ND** | **Oxidation Reduction Probe** | **2** | **$81.00** | **$162.00** | **112** |
| **4** | **PH-BTA** | **S16238ND** | **pH Sensor** | **2** | **$79.00** | **$158.00** | **111 112** |
| **5** | **VDC-BTD** | **S16274ND** | **Drop Counter** | **2** | **$99.00** | **$198.00** | **111 112** |
| **6** | **VP-BTA** | **S16072ND** | **Voltage Probe** | **2** | **$12.00** | **$24.00** | **112** |
| **7** | **GPS-BTA** | **S16052ND** | **Gas Pressure Sensor** | **2** | **$83.00** | **$166.00** | **111 112** |
| **8** | **TMP-BTA** | **S16268ND** | **Stainless Steel Temperature Probe** | **6** | **$29.00** | **$174.00** | **111 112 221 222** |
| **9** | **CHEM-A** | **S16119ND** | **Advanced Chemistry with Vernier Book** | **1** | **$48.00** | **$48.00** | **111 112** |
| **10** | **CWV** | **S16047ND** | **Chemistry With Vernier Book** | **1** | **$48.00** | **$48.00** | **111 112** |
| **Totals** |  |  |  |  |  | **$2,326.00** |  |

**Goal 5: Purchase overhead projector**

**Objectives**

Replace projector in room 234

**Method of Assessment**

N/A

**Additional Funds Requested**

$869.00- Diversified company quote.

**Unit Goals for 2018-2019**

**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.