What are the strengths of your area?: The mission of the Mathematics Department is to provide a foundation for liberal arts education and a foundation for the study of the sciences. This is accomplished by providing students with a broad range of courses taught through a wide range of delivery options including traditional lecture, hybrid, online, and simulcast courses.

We have well-qualified full time instructors within the Math Department. We have several who have published textbooks or will soon publish textbooks within their discipline. We have others who have published articles in refereed mathematical or statistical journals. We have a couple of Golden Apple Award winners and others that have been recognized for their excellence in teaching within local or state organizations. In total, we have 15 full-time faculty members in the mathematics unit as well as 17 adjunct members. Our latest percent of full time FTEF is 73%. We still have one full-time faculty replacement that we hope to fill soon.

We commonly divide our course into 3 unique categories: Developmental Mathematics (Math 360, Math 200, and Math 230), Transfer Level (Math 10, Math 11, Math 21, Math 154, and Math 70) and Major (Math 65, Math 66, Math 67, Math 80, and Math 81). Let’s look at each of these in terms of success and retention.

In our developmental courses, our success rates are currently at around 51% for the 2012/2013 school year. We have seen a small increase in recent years in our success rates in these courses. In 2010/2011 our overall success rates were 48%, then 49% in 2011/2012 and now 51% in 2012/13. In that same period of time, our Math 360 success rates have increased from 48% to 56%, while our math 230 success rates have increased from 47% to 53%. Retention rates have increased as well from 83% to 87% over that same time period.

We teach a large number of students in these developmental courses with an FTES of 276 for Math 200, 268.8 for Math 230 and 132.3 for Math 360 for the 2012/13 academic year. Together these 3 courses account for over 7.5% of the colleges FTES. We know there is even a larger demand for Math 360, but we do not have enough instructors to cover any more classes in our schedule.

Our overall success rate in our transfer level courses was 61% in the 2012/13 academic year with a retention rate of 86%.

In our major courses, we find some of our best success rates with some courses posting success rates as high as 70% on a fairly consistent basis. However, Math 75 has had some fairly low success rates and that has lowered our overall average in this category considerably as the mean is not resistant to outliers. Overall retention here was 85% in the 2012/13 academic year.

We teach a total of 13 courses on a regular basis. The FTES generated by math courses is usually close to 1000. This is over 10% of the College’s FTES. The division’s efficiency (E-WSCH/FTEF) is 629. Recall, 525 is the standard.

Our department prides itself on providing our students with a quality mathematics education by maintaining high academic standards as well as keeping up with the latest educational developments by attending state and national conferences such as AMATYC (American Mathematical Association of Two-year Colleges), CMC^3 (California Mathematics Council of Community Colleges), and ICTCM (International Conference on Technology in Collegiate Mathematics) among others. An example of keeping up with the current developments in education is that we have recently increased the number of online and hybrid course that we offer in the department. We hope to add 3 additional online courses starting in the fall so that we offer the same number of online courses in both the fall and spring semesters.

The Math department is intimately involved in both the MESA and SETA programs. Both of these programs offer valuable opportunities for our students. These opportunities serve to enrich their academic experience and help meet their educational and career objectives. Faculty members participate in a variety of ways including working with student mentors to provide Academic Excellence Workshops, presenting interesting research and mathematical ideas as keynote speakers at SETA meetings, as well as act as mentors and chaperons on field trips to 4-year colleges and universities.

What improvements are needed?: We are always striving to improve our success and retention rates. The state average for math classes overall is around 56% and in many of our courses we meet, exceed, or are just short of that mark. However, there are two courses in the last academic year where we have success rates that are much lower. The first is Math 75, our first semester calculus course. This has traditionally been a difficult class as it is filled with incoming freshmen who are perhaps used to finding success in math classes without exerting a lot of effort. That approach will not lead to success in a college level calculus course. We have made two significant changes
Overall Outcome Achievement: Originally, our goal with the first round of assessments when we assessed every course in the Spring of 2013 was to establish baselines for what we can expect in terms of proficiency for each learning outcome in each course. Though some courses are single section courses and therefore the sample size was quite small, for the most part, we feel the proficiency rates obtained were satisfactory in determining an overall baseline. The percentage of students that were considered proficient (scoring at least a 3 on a 5 point rubric) was roughly 68% on average for all our courses combined. Again, overall, this was satisfactory, but within the courses, we noted areas where we needed to improve and identified improvement strategies in TracDat.

We have since continued to assess classes according to our 3 year assessment plan. However, to try to get more meaning out of the assessment process, we decided to run a pilot project in the Spring of 2014 in two of our classes that were also assessed in the Fall of 2013. In the Spring of 2014, we used a different assessment method. We decided to use a pre-test/post-test approach. This would allow us to measure just how much the students had learned by taking the course. It would also allow us to see areas where we could improve. In short, the results for both Math 21 and Math 360 showed that students did in fact on average improved substantially for each SLO question in their post-test scores. We ran statistical tests and found all results to be statistically significant. We recently decided to use this same approach to assess all our lower level mathematics courses due to the success of the pilot program.

Changes based on outcome achievement: In addition to the Pilot Project discussed earlier regarding running a Pre-Test/Post-Test assessment, we have used the results of our SLOs to make some changes in hopes of improving learning. In Math 21, Introduction to Statistics, when we first assessed the courses, we noticed that the use of technology varied by each instructor. We noted in our reporting of our SLO’s if students were allowed to use technology when answering that question. After looking at the results, we are encouraging instructors to incorporate the technology that is available to them in their classrooms.

We also used the results of some poor learning outcomes in our Math 80 class regarding formal proofs to justify the need for an extra unit. When we changed the calculus sequence to a 4-4-4 sequence from a 5-5-3 sequence, we also changed Math 80 from a 3 unit course to a 4 unit course. The results from our assessments helped us justify this change and our math majors are still taking the same number of units they were in the past since we had lowered the units for the calculus sequence. Preliminary results of this change show the change was effective in improving proficiency of proofs in Math 80.

Outcome cycle evaluation: We have just finished year one in the 3 year cycle and are anxious to start on year two. We have broad, effective participation within the unit. In fact, at our first Dialogue Days event, every full-time member was in attendance. We are still seeking to find the best method of assessment that will allow us to find appropriate improvement strategies. However, we are satisfied with the results and process so far.

Action: New Faculty Hire -- Mathematics

Hire new full-time tenure track Mathematics faculty member to help alleviate the bottleneck of students who can not get courses due to insufficient number of courses offered and to help meet student demand at our three campuses within our district.

  Start Date: 08/01/2014
  Completion Date: 05/30/2015
  Status: New Action

Identify related course/program outcomes: 1. Students take real situations and develop mathematical models to solve problems
  2. Students to apply analytical techniques to solve problems
  3. Students to create, interpret and analyze graphical representations of data and equations

The above statements our are program outcomes.

Person(s) Responsible (Name and Position): Jared Burch as Division Chair and Division Members that are on hiring committee

Rationale (With supporting data): The Faculty Growth Template identifies that there is a large student demand for additional mathematics courses. Our fill rates at census are over 110% on average! However, without additional faculty, we can not offer additional classes. This is evident by the fact that the division in the 2012-2013 academic year had an FTEF of 46.8 of which 73% were taught by FT faculty. This translates to 15 full time faculty teaching the load of more than 17 full time faculty. In fact, we are still short one full-time faculty replacement due to recent retirements and promotions to administration. Our Efficiency is 629 (recall the standard is 525) and the Division has nearly 1000 FTES which is over 10% of the FTES generated at the college. Counseling has asked that we offer more math 360 courses, but we are unable to due to...
lack of faculty available to staff them. Additionally, finding adjunct members to teach is difficult in mathematics as there are very few individuals in the area with Master's Degrees in Mathematics that are not currently employed full time at another institution.

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<td>Salary and Benefits sufficient to hire a full-time tenure track faculty member to teach mathematics and statistics courses.</td>
<td>The hiring of a new full-time mathematics faculty member will require a monetary expense. This resource is required in order to meet institutional goals of student success and to help fulfill the mission of the college which is to support student's mastery of basic skills and to provide student's with the curriculum necessary to transfer or achieve their occupational objectives.</td>
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**Resource Type:**
Faculty- New/Replacement

**Action: Accelerate Math Sequence**
Offer short term Math 200 and Math 230 courses in both the fall and spring semesters of the 2014-2015 academic year to accelerate students through the math sequence.

**Implementation Timeline:** 2014 - 2015
**Start Date:** 08/11/2014
**Completion Date:** 05/30/2015
**Status:** New Action

**Identify related course/program outcomes:** This is not related to a course/program outcome as much as it is related to a District Objective -- specifically #6.

**Person(s) Responsible (Name and Position):** Jared Burch (Division Chair), Jon Blakely (Instructor - Fall 14), and George Woodbury (Instructor - Spring 2015)

**Rationale (With supporting data):**
This action is our attempt to meet District Objective #6 -- Accelerate the schedule for offering the math sequence that was imposed at the Fall 2013 Convocations.

**Priority:** Medium
**Safety Issue:** No
**External Mandate:** Yes
**Mandate Explanation:** The District without consultation to our unit, imposed District Objective #6 to accelerate the math sequence. Offering short term classes in math will meet this objective.

**Action: Increase Student Access and Privacy**
Build a wall that separates the offices in Kaweah 204A with the main classroom.

**Implementation Timeline:** 2014 - 2015
**Start Date:** 09/03/2014
**Completion Date:** 08/01/2015
**Status:** New Action

**Identify related course/program outcomes:** By increasing student access to faculty and by eliminating classroom interruptions, students will more likely be able to:

- take real situations and develop mathematical models to solve problems.
- apply analytical techniques to solve problems.
- create, interpret and analyze graphical representations of data and equations.

**Person(s) Responsible (Name and Position):** Jared Burch (Division Chair) and Ralph Mallouf (Facilities)
Rationale (With supporting data): A wall is needed so that students coming to faculty office hours do not interrupt the class in Kaweah 204A. Additionally, students do not like to visit the office hours of their instructors since they get embarrassed when they open the door and there is a class full of students in the room. This action plan will help to increase student access to faculty by improving office space and student privacy.

Priority: High
Safety Issue: No
External Mandate: No

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| We have inquired with facilities of the cost of this project and have obtained three bids. The first two bids are for a partition that is anchored on each end to the existing classroom walls and includes a solid core door. There are two options for the height of the wall/partitions -- 82 and 95 inches. These will of course not extend all the way to the ceiling in this room. The third bid is for a full wall (with door) that will extend all the way to the ceiling. | Construction of a wall will require a monetary resource. | Our division ranked this as our #1 above based budget request item. The three bids were as follows monetarily: 82 inch high partition: $7750
95 inch high partition: $8850
Full Wall: $12650 approximately. | Yes |

Resource Type: Non-instructional equipment

Related Documents: Quotes for Wall, Desks, and Chairs.pdf

Action: New Desks and Chairs

Purchase New Desks and Chairs in Kaweah 204A

**Implementation Timeline:** 2014 - 2015

**Start Date:** 10/15/2014

**Completion Date:** 08/08/2015

**Status:** New Action

**Identify related course/program outcomes:** A better classroom environment will help our students meet the program and course outcomes. We mostly teach math 21 in this classroom as we use the computers in this room nearly everyday to perform statistical analysis. Thus, the related course outcomes for math 21 are below:

1. Students will be able to use descriptive statistics to appropriately describe a given data set.
2. Students will be able to use a probability distribution to calculate probabilities for applied problems.
3. Students will be able to construct and interpret an appropriate confidence interval from sample information.
4. Students will be able to perform and interpret an appropriate hypothesis test based on sample information.

**Person(s) Responsible (Name and Position):** Jared Burch (Division Chair) and Ralph Mallouf (Facilities)

Rationale (With supporting data): Kaweah 204A is primarily used for our Math 21 courses. Math 21 requires as part of our course outline extensive use of computer related software to enhance the course. Thus, the computers are used nearly everyday in these courses. Our current desks do not house the cabling well. As a result, cords get pulled and unplugged and the computers do not work. Additionally, when computers are not shut down properly, but shut down due to something getting unplugged, it tends to shorten their shelf life. We would like to minimize this by getting new desks and chairs. We hope this will decrease the amount of time computer services is asked to come and fix computers that are not working and increase the amount of time students can access the software needed in the course.

Priority: Medium
Safety Issue: No
External Mandate: No

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<td>Purchase a new set of desks and chairs in Kaweah 204A that will house our cabling better which in turn will help to improve computer stability in a classroom where computers are used nearly everyday as our Math 21 course outline requires extensive use of computer statistical software. Our understanding is that these are the same desks that are used in Tulare that will hide the cabling and reduce maintenance.</td>
<td>A monetary expense will be required to purchase new desks and chairs.</td>
<td>Our division ranked this as #2 in our above based budget requests.</td>
<td>Yes</td>
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**Resource Type:** Non-instructional equipment

**Related Documents:**
- Quotes for Wall, Desks, and Chairs.pdf

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**Action: New Cabling**

Rewire with new cat 6 cables Kaweah 204A and Kaweah 202A

**Implementation Timeline:**
- **Start Date:** 10/15/2014
- **Completion Date:** 08/08/2015
- **Status:** New Action

**Identify related course/program outcomes:**
A more stable internet connection will help our students meet the program and course outcomes. We mostly teach Math 21 in this classroom as we use the computers in this room nearly everyday to perform statistical analysis. Thus, the related course outcomes for Math 21 are below:

1. Students will be able to use descriptive statistics to appropriately describe a given data set.
2. Students will be able to use a probability distribution to calculate probabilities for applied problems.
3. Students will be able to construct and interpret an appropriate confidence interval from sample information.
4. Students will be able to perform and interpret an appropriate hypothesis test based on sample information.

**Person(s) Responsible (Name and Position):** Jared Burch (Division Chair) and Steve Pratt (IT)

**Rationale (With supporting data):**
Cabling for these rooms is over 18 years old and technically beyond its rated lifetime. New cabling will increase networking capacities and help decrease some of the maintenance issues we have in these labs.

**Priority:** Medium

**Safety Issue:** No

**External Mandate:** No

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Kaweah 204A and 202A need to be rewired with new network cabling. Steve Pratt agrees that the cabling is past its shelf life and that we are in need of an upgrade. He helped us obtain a bid for this project.

**Resource Type:** Non-instructional equipment

**Related Documents:**
- Quote for cabling.pdf

**Add Resource Request for Action**

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<td>Kaweah 204A and 202A need to be rewired with new network cabling. Steve Pratt agrees that the cabling is past its shelf life and that we are in need of an upgrade. He helped us obtain a bid for this project.</td>
<td>A monetary resource is required to purchase and install new cabling for these rooms.</td>
<td>Our division ranked this as #3 in our above based budget requests.</td>
<td>Yes</td>
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