

# Mathematics Department

## AUP for Academic Year 2019-2020

October 2018

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### Describe Department/Unit

#### Connection to College Mission

The Mathematics Department at Cerro Coso Community College plays an important role in preparing students to achieve their educational goals. The department currently offers math courses from the remedial level to transfer level as well as an online math degree. Beginning in the fall of 2019, the department plans to accelerate students through the math sequence by placing all entering math students into either a transfer-level College Algebra (with or without concurrent support) or for non-STEM majors, a Beginning Probability and Statistics course. The department's curriculum supports the mathematical needs of other disciplines and programs. The department's courses help students develop logical reasoning and problem solving skills which form a foundation for their careers and future study. The Mathematics Department at Cerro Coso Community College offers classes which support the requirement for the AA and AS degrees, vocational/technical programs, and transfer to the university. We have entered into agreements and developed equivalencies with the California State Universities (CSU) and University of California (UC) systems. When our students transfer to the CSU or UC system, credits they earn in the mathematics department are transferable. This is also an indication that these transfer students from Cerro Coso Community College will be successful in completing higher degrees. The Mathematics Department offers courses at the Indian Wells Valley (IWV), Kern River Valley (KRV), Eastern Sierra College Center (ESCC), South Kern (SK), sites in Cal City including dual enrollment classes and at the Cal City Correctional Facility, and Tehachapi sites as well as online. Currently, three full-time faculty serve the IWV campus. One full-time faculty serves the KRV campus, and two full-time faculty share teaching classes at the ESCC campuses. Courses offered at SK and Tehachapi campuses are taught by adjunct faculty. A full-time High School Math Faculty also teaches dual enrollment math courses at Tehachapi High School.

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### Report on Improvements Made and Gaps Identified in the Prior Year

#### Student Equity: Actions Taken

The department has tried to engage more African-American students into its Math and Science programs through community outreach events. One of the full-time math faculty continues to regularly attend UMOJA meetings and events. Another faculty continues to lead a STEM club on campus which meets regularly throughout the year. The Math Department continues to participate in community outreach events by having math faculty participate in events like the eighth grade day and the I'm Going to College Day for fifth graders. All of these actions are undertaken as a means to draw more interest from students from our gap populations into math programs and classes.

Another gap population previously identified is the older students between the age range of 30 to 39 as well as students returning to academia after several years of absence. To help these students, the math department has continued to staff a math lab with math instructors who are available to tutor students on a drop-in basis. To accommodate students with full-time jobs and other obligations, the lab is staffed morning, afternoons and evenings 4 days a week to maximize student access.

At the beginning of the previous year the Math Department adopted a best practice of greater transparency as a means to close achievement gaps in math classes. This past year certain best practices were implemented in all sections. Some of the practices include maintaining a Canvas course shell for on ground classes, clearly stating classroom expectations of both the instructor and student throughout the semester, and keeping students updated with frequent feedback on their grades and performance.

#### Student Equity: Gaps to be Addressed

##### Ethnicity: African American

##### Gap Identified:

Retention and success in all math courses are up 1% and 2% respectively when compared with the average rates over the last 5

years. However, both retention and success rates for African American students are still substantially lower than other ethnic groups in math. This year's math success rate for African American students was up 2% from last year and 1% from two years ago. Although the trend in success is upward it is so small from year to year, that it's not possible to state that the current measures are having any practical significance in increasing success for the African American students.

### **Ethnicity: American Indian**

#### **Gap Identified:**

The American Indian students have a 48% success rate in math which is down 3% from last year and unchanged from two years ago. The validity of this success rate may be questionable though due to low numbers.

### **Age: 40 or older**

#### **Gap Identified:**

An interesting observation this past year for the 40 and older students is a success rate of 58% which is 18% lower than the college-wide success rate for this age group. One reason might be that older students tend to be enrolled in remedial math courses which tend to have lower success rates.

In comparison with last year, the success rate in math is up only 1% and remains unchanged from two years ago for students who are 40 or older.

### **Ethnicity: Hispanic**

#### **Gap Identified:**

For Hispanic students, the overall math success rate has actually decreased 1% each year over the past two years. It could be concluded that measures to increase success such as the math lab are either not being utilized by this ethnicity group or are not having any direct effect towards increasing success in math classes.

### **Ethnicity: Filipino, Asian, Pacific Islander**

#### **Gap Identified:**

For the Asian, Filipino, and Pacific Islander students, there has been a consistent although small ( 3 percent) increase in student success in math over the last two years.

## **Outcomes Assessment: Actions Taken**

### **Actions taken in the prior academic year**

One improvement the department made was to reduce the number of student learning outcomes for MATH C121, Statistics. The number of SLOs went from 16 to just 4 outcomes which are broader in scope. Also, in changing the Calculus courses from 5 units to just 4 units, the number of SLOs in these courses were reduced as well allowing instructors to spend more time working towards the mastery of fewer outcomes. Over the past year the department deviated from its long practice of allowing only full-time instructors to teach online. Over the last year four adjunct instructors taught online for the first time online. The department felt that it was necessary to have adjuncts experienced in online delivery of classes as the department moves towards assessing all sections in all teaching modalities.

### **Assessments completed in the prior academic year**

No formal assessment or reassessment of SLOs were made in the immediately preceding year.

## Outcomes Assessment: Gaps to be Addressed

### No Formal SLO Assessments were Documented For Academic Year 2017 - 2018

**Type:**

SLO

**Target Missed/Gap Detected:**

No Formal SLO Assessments were Documented For Academic Year 2017 - 2018

**Type of Gap:**

**Analysis and Plan for Improvement:**

**Anticipated Semester for Implementing Planned Improvements:**

**Anticipated Semester of Next Assessment:**

FALL 2018 and Spring 2019

## Program Review: Actions Taken

### Mathematics AS-T PProgram

**Year of Last Program Review:**

2016

**Actions Taken in the Prior Year to Address Strategies:**

One of the three year goals stated in the last Math Program Review was to investigate OER materials for math classes to reduce textbook costs to students. Currently at least four full-time faculty and two adjunct faculty have begun investigating the use of OER materials such as Open Stax, OpenIntro textbooks and the MyOpenMath site which is free to students. Three full-time instructors have already eliminated textbook and access code fees for students. Another instructor has stated it as a goal in a mode B evaluation to implement the use of an OER before the next evaluation. Thus progress towards this goal continues to be made.

Another three-year goal was to have the entire math department agreeing on and implementing an efficient SLO assessment process and then communicate the expectations and procedures to all department members. The first part of the process has been implemented as the new eLumen system is now working. However, communicating the process out to all instructors has proven to be difficult. Most of the dual enrollment instructors do not check their Cerro Coso email frequently. To help improve the communication of the SLO assessment instructions a math department Canvas shell has been created where all instructors can read what courses are to be assessed and when as well as access the actual assessment artifacts.

One of the six-year program review goals was to offer Differential Equations in an online modality. That has been accomplished as the class is being taught and assessed online this fall semester.

Another six-year program review goal was to have a full-time math faculty teach the majority of the on ground Calculus courses. Great progress has been made towards this goal as a new full-time instructor has been hired and is now teaching Calculus I this semester at IWV. He will continue in spring to teach Calculus II on ground at IWV so this goal is very close to being accomplished.

**Strategies Still to be Addressed:**

Strategies that still need to be addressed include communicating out efficiently to all instructors the SLO assessment process, collecting course progress data specific to students in the math program, and improving the PLO assessment data specific to math majors. The last two three-year program strategies will be a lead measure to the six year program strategy of increasing the number of students that complete the math program.

## Annual Planning: Actions Taken

### Implement a Comprehensive SLO Assessment Process

A Math Department Canvas shell has been created where all full-time math faculty can view SLO assessment artifacts, department meeting minutes and the SLO assessment schedule. Department policies and announcements are also posted there. What remains to be done is to get all adjunct math instructors access to the shell so that they can view the outcome assessment information too. Currently it is being sent to them by email and there is no way of knowing if adjuncts are checking their Cerro Coso email regularly.

The one correction that needs to be made to the measure of success described last year is that SLO assessment results will be uploaded into the new eLumen site and not on a department Canvas shell.

### Expand Online Tutoring

The Basic Skills Coordinator has been instrumental in getting an online tutoring service uploaded directly into the Canvas course site for online math classes. By clicking on the link, students can meet virtually with a live tutor, drop off a question, or watch videos of previous sessions and review feedback involving dropped off questions.

Since this online feature was only recently set up this year, it is too early to report out to what extent students are taking advantage of this online tutoring service.

### Reduce textbook costs

This action was checked as "in progress" instead of completed due to the fact that there are still sections of math where the instructors are not using of Open Ended Resources, (OERs) in their classes. So there is still room to expand this action plan. It can be said though that the number of instructor and number of sections that use an OER have increased over the past year.

With the implementation of AB 705 in fall 2019, Math C040, MATH C050, MATH C053, and MATH C055 may no longer be offered so the measure of success may well change to instructors using a variety of self-created teaching materials and activities for the new proposed Statistics lab course or at a minimum finding lower priced materials for the lab portion of the course to reduce the overall required cost.

### Increase the Scorecard in Basic Skills Courses

With the push toward enrolling all incoming students into a transfer-level math course beginning in fall of 2019, the scaling out of strategies used at KRV to get basic skills math students to consistently attend math labs has diminished from the previous year. While instructors continue to encourage basic skills math students to attend the labs and instructors still run regular hours in the lab to help students on a walk in basis, there appears to be a correlation between students and instructors realizing basic skills math courses are going away and basic skills student attendance in the lab.

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## Review of Current Year Initiatives

### Reminder of Initiatives for the Current Year

#### Offer Corequisite Support Course for Math C055

Over the last year, the department has changed the nature of the concurrent math support from a corequisite model one level below transfer to a transfer-level course with support via a lab or in the case of STEM majors use embedded tutors to help students in the transfer-level math course.

It may be invaluable for instructors of the transfer-level courses to have a list of the last math course taken and grade obtained for

each student prior to the beginning of the term in planning. Is this information obtainable form I.R.?

Is there any way to obtain funding to off set printing costs for materials at the prison?

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## Plan Initiatives for Next Year

### Initiatives for Next Academic Year

**Increase the number of students completing transfer-level math in one year.**

**Is this part of a multiyear initiative?**

Yes

**Specific Action Steps to be Taken:**

Revise the Probability and Statistics course to a 3 unit lecture and 1 unit lab course and submit for CIC approval.

Work with library personnel to correctly implement using embedded tutors in College Algebra.

Develop statistics lab activities and assignments and post to the math department canvas shell so all math faculty can access the materials

**Lead Measure of Success:**

Track the success rates on exams given before mid-semester. Based on these success rates, make changes or adjustments to the lab activities or assignments as needed in order to boost success rates on exams.

**Are any of the lead measures identified above lacking assessment instruments?**

No

**Does the department request help to develop these instruments?**

No

**Lag Measure of Success:**

Analyze the overall success and retention rates as well as equity numbers for the Statistics lab course. The same could be done for the College Algebra course for the STEM majors as well following through cohorts success and retention data in subsequent math courses.

**Person Responsible:**

Steve Rogers

**It addresses a gap in student equity**

**Which strategic goal does this initiative address?**

Goal 1: Maximize Student Success, Goal 2: Advance Student Equity Measures, Goal 3: Ensure Student Access

**Sustain and increase the number of math courses offered in the Tehachapi area.**

**Is this part of a multiyear initiative?**

Yes

**Specific Action Steps to be Taken:**

Conduct a meeting or meetings of all stakeholders in the Tehachapi area (administrator, math department chair, full and adjunct math faculty, site director and counselor.) Become aware of and develop a plan for the following:

1. Instructor scheduling and teaching availability at the correctional facilities
2. Class sizes
3. Material needs (i.e. copies, textbooks, classroom set up, calculators)
4. Tutoring needs

**Lead Measure of Success:**

A meeting is held and all stakeholders become aware of and discuss potential solutions to the needs, issues and concerns that are reoccurring for classes in the Tehachapi area.

**Are any of the lead measures identified above lacking assessment instruments?**

No

**Does the department request help to develop these instruments?**

No

**Lag Measure of Success:**

This initiative is to improve efficiency and ensure the sustainability and growth of the math program in the Tehachapi area. It will be an ongoing multi-year initiative. As a lag measure the group of stakeholders that meets ( perhaps a Tehachapi committee) could potentially develop a survey to collect data every semester on crucial items such as teacher to student ratio, number of students without a textbook etc. With data such as this over a period of several semesters we would have information that would tell us not only if we are moving in the correct direction in resolving some of the issues but also inform us as to whether we can offer more sections or new courses in the future without additional resources.

**Person Responsible:**

Steve Rogers, Tehachapi Area Math Faculty

**It addresses a gap in student equity**

How do we ensure that all students in the Tehachapi area have the same opportunities for learning that students at the other sites do?

**Which strategic goal does this initiative address?**

Goal 1: Maximize Student Success, Goal 2: Advance Student Equity Measures, Goal 3: Ensure Student Access

**Offer College Algebra and Trigonometry at sites.**

**Is this part of a multiyear initiative?**

Yes

**Specific Action Steps to be Taken:**

1. Determine the number of potential STEM majors at the sites.
2. Offer a College Algebra Course at the sites

**Lead Measure of Success:**

A lead measure would be data regarding the number of students wanting to take more on ground math courses at the sites. In fall of 2019, with only transfer-level math courses being offered, sites such as KRV, Mammoth and Bishop will literally have only one math course to offer on ground. That is MATH C121 Statistics. Data collected regarding a cohort of possible STEM majors may indicate that College Algebra with embedded tutors should be offered. Then the success rates in the College Algebra classes could be used to justify offering MATH C142 Trigonometry at the sites. The only option currently for students at KRV, Bishop, and Mammoth who want to take these courses is to take them online or drive to IWV.

**Are any of the lead measures identified above lacking assessment instruments?**

Yes

**Does the department request help to develop these instruments?**

Yes

**Lag Measure of Success:**

Number of STEM declared majors at the sites

**Person Responsible:**

Steve Rogers, Dean Bernsten, Joe Slovacek

**It addresses a program review strategy**

A six-year program review strategy is to increase the number of students completing the math program.

**Which strategic goal does this initiative address?**

Goal 3: Ensure Student Access

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## Evaluate Resource Needs

### Facilities

Reduce some class sizes at Cal City Correctional Facility or provide a classroom set up that is more conducive to learning. Faculty also report that they need more white board space.

### Information Technology

The department does not foresee any immediate technology needs.

### Marketing

The department does not foresee any immediate needs in marketing.

## Professional Development

A conference on using Statway or the development of Statistics lab activities would be valuable to some math faculty as the department revises its current Statistics course to a lecture/ lab support format in fall of 2019.

Additional training on how to implement embedded tutoring in the classroom as well as in online classes.

## Research and Data

It would be useful to have the names of all self-declared Math majors.

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## Staffing Requests

### 1000 Category - Certificated Positions

#### Mathematics

**Location:**

**Justification:**

No Certiificated Request for this year

### 2000 Category - Classified Staff

#### Mathematics

**Location:**

EKC Edwards/Cal City, EKC Tehachapi

**Salary Grade:**

**Number of Months:**

**Number of Hours per Week:**

6 -15

**Salary Amount:**

\$15 -\$30 /hr

**Justification:**

Part- time Classified Tutor for the prisons