

# Mathematics Department

## Annual Unit Plan for Academic Year 2018-2019

October 2017

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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. We offer math courses from the remedial level to transfer level as well as an online math degree. Our curriculum supports the mathematical needs of other disciplines and programs. We help our 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 improve basic skills and 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 (IWW), Kern River Valley (KRV), Eastern Sierra College Center (ESCC), South Kern (SK), and Tehachapi sites as well as online . Currently, three full-time faculty serve the IWW campus. One full-time faculty serves the KRV campus , and one full-time faculty serves 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

At the beginning of the semester the Math Department decided to choose greater transparency of expectations as its initiative to reduce student equity gaps. This semester all full-time instructors have stated in on ground and online course syllabuses what the expectations are of students. This includes the instructor's expectations for regularly attending class (for online classes that would be logging into the Canvas site regularly) , required study time outside of class, steps to be taken for remediation in the math lab and classroom etiquette. Instructors also included in their syllabuses the things that their students could expect of them such as arriving to class on time and being available to help with questions.

In addition, all full-time instructors in the department are using a Canvas shell in conjunction with on ground classes so that students have more immediate access to class handouts, class events and course materials.

#### Student Equity: Gaps to be Addressed

##### Ethnicity: African American

###### Gap Identified:

The African American population has a lower retention and success rate in math than other populations. For this population over the last five years the math retention rate was 74% and the math success rate was 46% which is close to the collegewide rates for the group.

The department continues to staff both full-time and part time instructors in the math lab in order to support students who need tutoring available on a drop in basis.

##### Age: 40 or older

###### Gap Identified:

Students from the 40 and older age group over 5 years have a success rate in mathematics that is about 18% lower than the collegewide success rate for this age bracket.

The department continues to staff both full-time and part time instructors in the math lab in order to support students who need tutoring available on a drop in basis.

## Outcomes Assessment: Actions Taken

### Actions taken in the prior academic year

MATH C141 Various strategies were implemented this year to improve scores on outcomes that missed the 70% target in the last formal assessment. For College Algebra, MATH C141, the single biggest change was the method of presentation of some of the more abstract concepts. More in class participation was encouraged by giving students handouts where they could immediately try to solve problems after one or two examples had been presented. Some instructors work directly from an electronic notepad in on ground classes and are able to work problems along with students from any location in the classroom instead of just at the board. This has been effective in students understanding the material in on ground sections.

Instructors in some online sections of this course now require students to scan and upload paper written assignments that demonstrate knowledge of the skill before being tested on it. This in turn leads to subject matter posts in online discussion forums. The increased interaction between instructor and student in online sections has also helped improve outcome results.

It was determined that the MATH C121 (Probability and Statistics) course has too many outcomes. The 16 outcomes were put into place in order to match the CID descriptor for this course. However the department has decided to align these 16 outcomes into just four general SLOs by the next assessment date. This has now been done and the revised course is now awaiting a second read at CIC. Having fewer outcomes will not only make assessing outcomes easier but will allow some overlap of results of this outcome with other outcomes that were above the target.

The last time the SLOs were formally assessed in MATH C151, all of the SLOs were 70% or better with the exception of:

SLO 5 Apply the integral in solving for the volume of a body of revolution. 66%

SLO 6 Apply the integral in finding the center of mass in one and two dimensions. 48.5%

These two outcomes are being removed from the Calculus I course with a reduction in units from 5 to 4 units. These skill will now be taught in Calculus II when the new COR is approved.

In MATH C251, all of the SLOs were 70% or better with the exception of

SLO 5 Solve simple differential equations of the first and second order. Not assessed.

This SLO will be removed from this course as units for the course are reduced from 5 to 4.

In MATH C255, all of the SLOs were 70% or better with the exception of:

SLO 4 Demonstrate the interrelationships of real world situations to the ODE's and modeling

associated applications using formula development, direction fields, and phase lines and

SLO 9 Perform computations and graphical interpretations using computational and mathematical

software.

These two SLOs were not assessed. At the time the outcomes for this class were assessed, the instructor and a senior full-time faculty discussed whether these two outcomes would be eliminated when the COR is revised this year. Since that time, the SLOs in this course have been reduced to broader more all encompassing outcomes. There will now only be 3 outcomes beginning in spring 2019.

All other outcomes in the math program have met the 70% target

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

### MATH C141 SLO Results Reassessed in spring 2017

SLO 5 reassessed in spring 2017 and mean was 70.2%

SLO 7 reassessed in spring 2017 and mean was 69.7%.

SLO 8 reassessed in spring 2017 and mean was 74%.

SLO 9 reassessed in spring 2017 and mean was 73.9%

### MATH C121

No formal reassessment done over the prior year. SLOs have been rewritten.

### MATH C151

No formal reassessment done over the prior year. SLOs have been rewritten.

### MATH C152

No formal reassessment done over the prior year. SLOs have been rewritten.

### MATH C251

No formal reassessment done over the prior year. SLOs have been rewritten.

### MATH C255

No formal reassessment done over the prior year. SLOs have been rewritten.

## **Outcomes Assessment: Gaps to be Addressed**

## **Program Review: Actions Taken**

## **Associate Of Science Degree In Mathematics (AS-T)**

### **Year of Last Program Review:**

2016

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

### **Strategies Still to be Addressed:**

One of the 3 year goals is to define an improved SLO assessment process. This fall the department is revising the course outlines of record CORs for all of its math courses in the degree. At this time the courses have all made it through a first read at CIC. The main changes to the CORs have been updating the student learning outcomes SLOs to be fewer in number and more broad in scope. The detailed topical outlines have also been aligned with c-id descriptors to ensure articulation. The department has a Canvas shell where SLOs, artifacts to test the outcomes, and results can be posted to streamline and make more visible the entire assessment procedure.

## Annual Planning: Actions Taken

### Create a Pre-Statistics Course

Over the last year, the department was able to get a Pre-Statistics course approved and offered it on ground for the first time in spring of 2017 at the IWV campus. This semester fall 2017, this Pre-Statistics course, MATH C053 is being offered both onground at IWV and online as well. It is also in the schedule to be taught at the Cal City Prison location in spring of 2018. To truly measure the success of this initiative the department will need to obtain data as to exactly what percentage of nonSTEM majors are enrolling in this course in comparison to the traditional Intermediate Algebra course.

### Bring Additional Higher Level Math Courses to the KRV site

While this measure has not been completely withdrawn, the attempt in implementing higher level math courses at the KRV site was not successful due to low enrollments.

### Increase the Number of Math Course Completions for One Level Below Transfer and at Transfer Level

The department continues to have it's full-time faculty either working paid hours in the math lab or serving students in the math lab during their office hours. Unfortunately, the adjunct instructors are no longer able to be paid for their service in the math lab. This is unfortunate as several students need help with their higher level math classes and these adjuncts are the best able to assist since they are the instructors teaching many of the higher level courses. Still, in terms of meeting the initiative of increasing course completions one level below and at the transfer level, the full-time faculty are still meeting this need.

Success rates in Probability and Statistics dropped roughly 3% this past year from the prior year.

Success rates Intermediate Algebra are exactly the same as the prior year, 57.2%.

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## Review of Current Year Initiatives

### Reminder of Initiatives for the Current Year

#### Implement a Comprehensive SLO Assessment Process

As a part of this initiative, a department Canvas site has been created for instructor collaboration with respect to SLO assessment processes. At this time, the department is in the beginning stages of learning to use this tool and main resource that could help with this collaboration is time to work together."

#### Expand Online Tutoring

Faculty are working to increase the pool of tutors. In partnership with the LAC, the math department is supporting the use of Cranium Cafe as a means to connect with online math students and provide support. As this venue for tutoring grows, so will the faculty increase encouraging students to make use of this service."

#### Reduce textbook costs

Some members of the department have made progress in the past year in implementing the use of Open resources in MATH C040 as well as in MATH C121. The department has been communicating with the Library for support with OER materials for math classes and will continue to participate in the initiative when viable."

#### Increase the Scorecard in Basic Skills Courses

The math instructors at KRV have very successfully incorporated the Math Lab into the Math C040 courses. With the help of the LAC Coordinator and IR, we should be able to measure the success of this initiative."

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## Plan Initiatives for Next Year

### Initiatives for Next Academic Year

#### Offer Corequisite Support Course for Math C055

Is this part of a multiyear initiative?

Yes

#### Specific Action Steps to be Taken:

The department would like to design and implement a 2 unit support class for two math courses that count towards graduation, MATH C055 (Intermediate Algebra for STEM majors) and MATH C053 (Pre-Statistics non-STEM majors).

#### Lead Measure of Success:

A lead measure would be a reduction in the number of MATH C050 (Beginning Algebra) enrollments beginning in fall of 2018. The idea would be that students who would normally place into MATH C050 (Beginning Algebra) would now enroll directly into either MATH C055 with support or MATH C053 with support.

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:

A lag measure would be a reduction in the number of semesters required for students to meet math graduation requirements since there are fewer courses in the sequence. Another expected lag measure would be an increase in the number of completions of the math sequence due to the extra support provided to students.

#### Person Responsible:

Steve Rogers, Jaclyn Kessler, Yihfen Chen

#### Other

It should accelerate all students through the remedial math sequence.

Which strategic goal does this initiative address?

Goal 1: Maximize Student Success

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## Evaluate Resource Needs

### Facilities

The department does not foresee any immediate facilities needs.

## Information Technology

The department does not foresee any immediate information technology needs.

## Marketing

The department does not foresee any immediate needs in marketing.

## Professional Development

The department foresees a need to have additional training in teaching corequisite math classes. More time to collaborate with other instructors who have been successful with corequisite teaching methods would be beneficial as would time actually observing other math corequisite courses being taught.

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## Staffing Requests

### 1000 Category - Certificated Positions

#### Mathematics

##### Location:

EKC Tehachapi

##### Justification:

1. There are too many students that need math classes at the prison sites. The projection of incarcerated students at both Cal City and Tehachapi prisons is 800-1000 students for this upcoming spring/fall 2018 semesters. These numbers are pretty much larger than all four sites combined (Bishop, Mammoth, KRV, and Tehachapi), and this number will grow.
2. The math classes that are offered currently are at capacity.
3. The math courses offered at the prison are core mission in the sense that mathematics courses are a requirement for the IGTEC/AST Degree patterns; therefore, a critical component for these incarcerated students student education plans.
4. Currently, math courses are not overscheduled.
5. At the prisons, there is little or no flexibility to offer courses at different times or different locations.
6. It is not currently known if there is a workforce shortage in the Tehachapi area.
7. It is not currently known if there is a cost or loss of revenue due to gaps between student demand and program capacity.
8.
  - a) Over the past year, there have been 52 students on first day waitlists in traditional classes and 62 students on first day waitlists in online classes for a total of 114 students.
  - b) Over the past year, the department has had 143.3 FTES in traditional math courses and 156.2 FTES in distance ed. math courses.
  - c) The department currently employs 5 full-time faculty.
  - d) The department currently employs 8 adjunct faculty.
  - e) The department does not award certificates.

f) Over the past year the department has awarded 9AS-T Math Degrees.

g) Mathematics courses are a requirement for the IGTEC/AST Degree patterns and therefore are a critical component for several disciplines.

h) CTE classes. NA

i) In the previous year (2015-16), there were 2,846 first day enrollments and 2,377 census date enrollments.

## **2000 Category - Classified Staff**

**None**

**Location:**

**Salary Grade:**

**Number of Months:**

**Number of Hours per Week:**

**Salary Amount:**

**Justification:**

None needed.