

**Bakersfield College 2018-2019
Program Review – Annual Update**

Program Name: **Mathematics**

Bakersfield College Mission: Bakersfield College provides opportunities for students from diverse economic, cultural, and educational backgrounds to attain Associate and Baccalaureate degrees and certificates, workplace skills, and preparation for transfer. Our rigorous and supportive learning environment fosters students' abilities to think critically, communicate effectively, and demonstrate competencies and skills in order to engage productively in their communities and the world

Describe how the program supports the Bakersfield College Mission: The Math Department provides effective learning and earning pathways by understanding and responding to the many needs of our students who come to us with diverse economic, cultural, and educational backgrounds. The department addresses these students' needs by offering courses using various instructional modalities such as face-to-face instruction, as well as hybrid, online, compressed and accelerated classes. These math courses satisfy the general education requirement for students seeking a Certificate, or an Associate Degree. We also have transfer level courses required for those students wishing to transfer to a four-year university. Students majoring in Math, Science and Engineering may also complete an Associate Degree in Mathematics. The ALEKS-based program used in our Math Learning Center supports self-paced student learning through appropriate technology and provides a streamline system that improves student access, retention and success for those seeking a hybrid learning environment in Pre-Algebra, Elementary Algebra, and Intermediate Algebra courses.

Instructional Programs only:

A. List the degrees and Certificates of Achievement the program offers.

Associate of Science in Mathematics for Transfer

B. If your program offers both an A.A. and an A.S. degree in the same subject, please explain the rationale for offering both and the difference between the two. **A.A. Mathematics degree is currently being phased out.**

C. If your program offers a local degree in addition to the ADT degree, please explain the rationale for offering both.

Program Goals:

A. List the program's current goals. For each goal (minimum of 2 goals), discuss progress and changes. If the program is addressing more than two (2) goals, please duplicate this section. Please provide an action plan for each goal that gives the steps to completing the goal and the timeline.

1. **Program Goal:** Look for solutions to the remediation problem, and to also streamline the math pathways for students.

List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?

(Student Learning, Student Progression and Completion, Facilities, Leadership and Engagement)

Goal: Student Learning and Student Progression and Completion

Progress on goal achievement:

Spring 2016 we started with 2 sections of Math B65 which is an accelerated math course to get students to statistics. For Spring 2018 we offered 13 sections of the course and we are currently offering 13 sections in Fall 2018. Success rates are better than our Math B60, but we are finding that students are not taking either Math B22 or Psych B5. Funding is needed for workshops on teaching Math B65 which has a lab component, as well as funds for developing new labs and other course materials.

Status Update – Action Plan and any link to Resource Requests:

We plan to phase out MathB65 in order to be in compliance with AB705. This class will most likely not be offered in Fall 2019. New students will be placed in a new course, MathB22L, which is Statistics with support (lab). We will continue to offer compressed MathB1A/B1B, our pre-calculus sequence.

2. Program Goal: Develop electronic course portfolios.

List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?

(1. Student Learning, 2. Student Progression and Completion, 3. Facilities, 4. Leadership and Engagement)

Goal: Student Learning and Student Progression and Completion; Leadership and Engagement

Progress on goal achievement:

We continue to use a drop box for Math B65 instructors to use. Labs are shared and updated on this site.

Status Update – Action Plan and link to Resource Requests

We will continue to use Drop Box or Google Doc for other courses but will phase out materials for MathB65.

B. List new or revised goals (if applicable)

Program Goal: The math department plans to create new and revised courses in order to be in compliance with AB705.

List the institutional goals from the Bakersfield College Strategic Plan that will be advanced upon completion of this goal?

(Student Learning, Student Progression and Completion, Facilities, Leadership and Engagement)

Goal: Student Learning and Student Progression and Completion.

Progress on goal achievement:

We have submitted into eLumen new courses: MathB1AL, MathB1AC, MathB22L, and MathB22C. We plan to submit course revision for MathB4A and a new course, MathB75.

Status Update – Action Plan and link to Resource Requests:

We continue to work on the Lab manual to accompany courses and will have them submitted by Nov 15 for UC articulation. We plan to meet the March 1st deadline for MathB75 submission.

Program Analysis:

Take a look at your trend data (all programs should have some form of data that is used to look at changes over time). *All programs will answer the following questions unless otherwise indicated.*

1. Please report on any unexpected changes or challenges that your program encountered this cycle:

There were no significant changes or challenges this cycle. However, there will be major changes to curriculum with the next cycle due to AB705 (legislative change affecting the requirement to take developmental Math/English classes), which we are currently dealing with. This will be discussed in next year's annual update.

2. How does your trend data (or other data your area collects) impact your decision making process for your program?

Our classes and waitlists are full every semester. There is a high demand for math classes. As a result of this, more instructors are always needed. We hired two full-time instructors. We have a lack of adjunct faculty due to not having a qualified pool to hire from. There is no university in Bakersfield that offers a graduate degree in mathematics, making it difficult to find people in Bakersfield with at least a Master's degree in Math. There is always a student need for more math classes.

We do not have access to some of the data that we would find useful. We have the success rates for the entire program. It would be more useful to have success rates at the course level. It would also be useful to be able to track student success in subsequent math courses taken the following semester; For example, we would like to answer questions such as: did the prerequisite math class prepare the student for their current math class?

3. Evidence of Department Dialog of data
 - If you have had time to review and discuss your program's data with members of your department, attach documentation of your discussion. Documentation can come in the form of minutes from meetings or retreats, email dialog or any other ways that show substantive discussion.

We haven't had time.

4. Were there any changes to student demographics (age, gender, or ethnicity) for the past cycle?

Our gender and age populations are unchanged. Ethnicity remained relatively unchanged (1% fluctuation)

5. Were there any changes to student success and retention rates for face-to-face and online courses? (instructional only)

Our Retention rates for both face-to-face and online classes remained relatively unchanged at 87% and 75%, respectively. Our success rate for online classes increased to 46% from 37%. Our success rate for face-to-face classes remained unchanged.

6. Equity gaps

- Please look for large differences, or gaps, between top performing groups and others. Consider how you could identify the reasons behind these gaps, and if there changes that could be made to reduce them. For in depth review of equity issues, and on changes that are being made campus-wide, please refer to the current [Bakersfield College Student Equity Plan](#).

Asian American students excel above the norm with a success rate of 64% and a retention rate of 89%. African American students are below the norm with a success rate of 41% and a retention rate of 77%. All other groups have a success rate ranging from 52% to 58% and a retention rate between 82 and 84%. It is difficult to determine the reasons for these gaps as there are many factors that could contribute to the gap (such as socioeconomic factors, employment and family responsibilities...). The Math department offers all students many tutoring opportunities outside the classroom.

7. Please describe any recent achievements of your department, including but not limited to faculty who have won awards or distinctions, new projects your department has implemented, professional development work, professional conference presentations or recently published work.

Awards and Distinctions

The Who Union Award was presented to Tom Greenwood this past year. The Disabled Student Programs and Services Award was given to Kurt Klopstein in fall 2017. Nigie Shi was presented with the Bakersfield College President's Leadership Award in May 2017, and with a Certificate of Recognition for International Faculty from the International Student Association. The Teacher Helping Another Teach Program 2017-2018 Volunteer Award was given to Janet Tarjan.

New Projects

Gurpreet Grewal, David Meyers, and Nigie Shi volunteered for a test run for Elumen in May 2017. The Women In Science and Engineering Club, accompanied by Rebecca Head, traveled to the University of California, Santa Barbara, for a tour of the campus and the Engineering College. Students of MESA carried out several activities with the assistance of Dillon Giblin. The Mathematics Department and associated student clubs

sponsored a Pi Day event on March 14. The Mathematics Department also had a table manned by Jon Brown, Regina Hukill, Donna Starr, and Isaac at the Chem Rocks event in October of 2017. Janet Tarjan received a \$100 Art Grant from DKG to support a student “Artistically Beautiful Mathematical Expressions” contest in May 2018. She also attended two workshops put on by the American Institute of Aeronautics and Astronautics Los Angeles-Las Vegas Section: The Near Earth Objects Deflection App. (All-Day) Hands-on Planetary Defense class on June 30, 2017 and the July 22, 2017 Celebration of the Anniversary of the Apollo 11 Moon Landing (48th) and the Vikings on Mars (41st).

Professional Development Work

The *Raising Calculus to the Surface Instructor’s Workshop* was attended by Rebecca Head in summer 2018. Nigie Shi earned a certificate of completion for the *Intermediate Canvas for Instructors* sessions.

Professional Conference Presentations

The Deep Learning and the Advent of Sentient Machines lecture was presented by Rafael Espericueta at a Norman Levan Faculty Colloquium in fall 2017.

Recently Published Work

Michael Fredenberg had an article published in the CMC Communicator journal: *The Importance of Eliciting Students' Mathematical Thinking*, CMC Communicator, Volume 42, No. 2. December, 2017.

Additional Achievements

The AMATYC Math Contest for students is sponsored at Bakersfield College by Patrick Serpa and takes place twice a year. Pat leads practice sessions with students and faculty to prepare for this statewide critical thinking test, then encourages them with snacks and smiles on test day.

Janet Tarjan was elected as the President of the Delta Kappa Gamma Alpha Alpha Chapter in Bakersfield in April 2018 and installed in June, 2018. Prior to this, Janet served as the elected 1st Vice President of the chapter for 2 years.

Math Faculty Professional Development included participation in sessions at Bakersfield College during flex weeks, the Math Department Book Club, and Kern Mathematics Council meetings with K-16 Math teachers and professors. Faculty attended mathematics conferences: American Mathematical Association of Two Year Colleges Conference in November 2017 and California Mathematics Council Community Colleges Conference in December 2017.

8. The college has embarked on significant efforts such as **Guided Pathways**, **affinity groups** and **completion coaching communities** to improve the success and completion rates of our students. Please describe what your program/department/office is doing to contribute to these efforts.

The Mathematics Department faculty have participated in Guided Pathways since the first workshop. A great deal of work is done at these workshops, where large projects begin and the college forms a unified vision. Afterward, with other faculty and staff from the college, we collaborate to produce Guided Pathways materials such as the STEM logo, pamphlet, and websites. Those products mostly focused on supporting prospective and new students “Clarify the Path” and “Enter the Path”. Department faculty have participated with the BC Math Club at events for such students to “Clarify the Path” and “Enter the Path”.

The work with the STEM Completion Coaching Meetings was Guided Pathways work, too. Some of it had a different focus from the workshops. Specifically, there were data analysis projects used to make sure students “Stay on the Path”. Math faculty helped deliver the data analysis to the STEM Completion Coaching Meetings. These projects came in a variety of forms, but they were mostly in order to identify students within the STEM Pathway that need some specific advice on how to “Stay on the Path”. For example, one message was that the student qualified to use early registration, but had not yet done so. Finding the target of the outreach was done by the math faculty data coach at a Data Coach Meeting. That data was shared at the STEM Completion Coaching Meeting. The dean, Dr. Stephen Waller, and other STEM faculty worked with the data further to organize the actual contact of the outreach.

The Mathematics Department has been pursuing innovative ways to increase completion rates and success rates. This is particularly true with Guided Pathways efforts, because a great emphasis is being placed on the completion rate for a student in light of their entire path. We have been offering more sections of accelerated courses and courses that are more pathway specific, which shorten the path. Recent analysis has shown these outperform previous courses in the metric of getting students to pass a transfer level math course in one year. The Math Learning Center has executed outreach campaigns to students who are not in a math class but recently took one. Those students “Stay on the Path” when we help them get into a math class. The Math Learning Center has instituted programs to increase the number of students who complete multiple hybrid courses in one semester. These efforts have effectively increased the success rates in the Math Learning Center.

Dillon Giblin and Janet Tarjan worked on an SI manual for student instructors which contains training and sample lesson plans. (see attachment)

9. Explain your role if you are involved in Dual Enrollment, Inmate Education, or Rural Initiatives.

Dual Enrollment: At this time, the Math Department is not supportive of having dual enrollment classes in the high schools. The high schools already have courses in place where high school students can earn college credit such as AP Calculus, or AP Statistics; CSUB is currently running a dual enrollment Pre-Calculus. We see no benefit to the high students to include BC transfer level math courses to what they already have available. The department has honored the agreements made by the BC Administration to offer Math B22 Elementary Statistics at Wonderful Academy as well as at the Wasco Ag Academy. We also schedule a night section of Math B22 at Shafter High School for BC students as well as for concurrently enrolled Shafter High School students. Also, night sections of transfer level math courses for concurrent high school students are always on the schedule.

Inmate Education: Spring 2018, we hired Jennifer Flenner as a full-time tenure track math instructor. The plan is to have her teach at least 3 sections of Math B22 Elementary Statistics at the prisons, and to pick up one or two sections of math at the Delano campus. We were unable to work out some of the course material requirements with the prisons for this fall, but are hopeful we can get these courses offered to the inmates as soon as Spring 2019. Jennifer has experience teaching inmates, so we are very excited to utilize her expertise in this area, and in helping inmates complete the math requirement for their academic pathway.

Rural Initiatives: The BC Math Department has consistently supported education in the rural areas. As mentioned above, we routinely offer math sections in Shafter, as well as in Delano, Arvin, Wasco and at BC Southwest. We have 2 full-time math instructors assigned to Delano, and 1 full-time at BC Southwest. Other math faculty and adjuncts teach 1 or 2 sections at these rural sites to fill in the gaps. The Math Chair works closely with the deans and directors of these satellite campuses to ensure that we have a broad and rigorous offering of math sections, and for the past several years we have bumped up the number of transfer level math courses in the rural areas in order to help students complete their educational goals.

Analysis of Received Resources from Previous Cycle

Discuss the type of resources you received and their Impact on program effectiveness?

Facilities: N/A

If your program received a building remodel or renovation, additional furniture or beyond routine maintenance, please explain how this request or requests impacts your program and helps contribute to student success.

- 1: Space Allocation
- 2: Renovation
- 3: Furniture
- 4: Other
- 5: Beyond Routine Maintenance

Technology:

If your program received technology (audio/visual – projectors, TV’s, document cameras) and computers, how does the technology impact your program and help contribute to student success?

- 1: Replacement Technology **(See attached ISIT form)**
- 2: New Technology
- 3: Software
- 4: Other _____

Other Equipment N/A

If your program received equipment that is not considered audio/visual or computer equipment technology, please explain how these resources impact your program and help contribute to student success.

Conclusion:

Present any conclusions and findings about the program. This is an opportunity to provide a brief abstract or synopsis of your program's current circumstances and needs. Consider this a snapshot of your program if someone were to only read this portion of your annual program review.

The program in the Mathematics Department will go through a major transition due to the implementation of AB705. We offer four transfer level, entry level, math classes which all need revision and co-requisite support. This is a multi-year process until final articulation get approved. The increased support for these course will require us to hire more than the usual number of faculty in a given year beyond our usual attrition. We also need support for a part-time professional to track the data of our students as they move through this new pathway to insure the changes are effective and moving students through in a timely manner and with increased success rates. In addition, we continue to offer outstanding tutoring support in the Math Learning Center, math clubs and activities continue along with faculty professional development.