Barstow Community College

INSTRUCTIONAL PROGRAM REVIEW

(Refer to the Program Review Handbook when completing this form)

PROGRAM:	Mathematics			
Academic Year:	2015-2016	**FULL PROGRAM REVIEW**	**Date Submitted:**	
Academic Year:		**ANNUAL UPDATE #1**	**Date Submitted:**	
Academic Year:		**ANNUAL UPDATE #2**	**Date Submitted:**	

By:

Faculty Lead:	Rodolfo Duque
Members:	Sally Van Denberg, Sona Vartanian

1. Program Mission and Vision

A. Program Mission

The Mathematics Department strives to foster principles of critical thinking and Math competency in order to aid students in reaching their educational goals. Our commitment is to provide and support our students in developing a strong mathematical foundation and encourage our student in STEM careers. Our program will continually strive to improve and sustain a high quality Math education.

B. Program Vision *(Where would you like the Program to be three years from now?)*

The Math department vision is to achieve and maintain excellence in student learning and success. Our vision is to provide quality education in Mathematics for our students to meet the expectations and guidelines of the State of California.

C. Describe how mission and vision align with and contribute to the College's Mission and Vision

A. "Fostering an innovative learning environment that respects the diversity of individual backgrounds, abilities, and cultures."

The Math department values and respects all students and their personal experiences. Whether is face-to-face course or online/hybrid course, we have developed a program that supports student learning at an individual basis. The Math department offers an extensive course curriculum, each of which is unique in its treatment of diverse topics. The Math instructors take the opportunity to really get to know and work with their students on a one-to-one basis. Various instructional strategies used fosters teamwork, student-student, and student-instructor interactions. With a variety of learning methodologies and teaching strategies, it is possible for students to choose a learning style that best suitable. Many of our student population take remedial Math courses and have difficulty with their initial Math course. The Student Success Center at Barstow Community College has a workable and productive tutoring center for students in need of additional help beyond the classroom. Also, office hours are available to all students if additional guidance is needed at a one-to-one basis.

B. "Offering programs to prepare student in basic skills, career and technical education, lifelong learning opportunities, and comprehensive lower division courses that meet articulation agreements for student transfer to four-year colleges and universities."

The following courses meet the associate degree requirements for CSU transfer and for IGETC requirements (BIOL 11 and MATH 1 are not on the IGETC list of classes).
Mathematics: MATH 1, MATH 2, MATH 3, MATH 4A, MATH 4B, MATH 4C, and MATH 5
These courses have been designed and articulate for Natural Science/Math majors transferring to four-year colleges and universities. Also Math 101, Math 50, and Math 55 are developmental Math courses offer to prepare students to acquire the basic Math skills required in lower division courses. The goal of all these courses are to provide the necessary background and tools for students to achieve the institutional or general education goals of Barstow Community College. The Mathematics department strive to prepare our students for upper division work at their transfer institution

C. "Promoting student engagement and retention through caring customer service, strong student support services, and campus involvement opportunities."

The Math department works closely with students and offers extra support services. Encouraging students to utilize the Barstow Community College Student Success Center as a tutorial center is one method to foster student support. Also, peer tutoring and establishing study groups are opportunities to foster campus involment.

D. "Providing counseling and other support services to assist students in the identification of their goals and achievement of their personal, educational, and employment potential."

The Math department constantly works with students to identify strengths and weakness. Math instructors provide guidance to all students that would like information on Math related careers.

E. "Partnering with local agencies, businesses, schools, and military bases to promote positive community development and economic growth."

The math department works with high school math teachers to promote positive community development. Every Fall semester there is a Dinner and Dialogue with high school math teachers to discuss potential opportunities that would better assist new incoming high school students. Also, partnerships has been established with California State University San Bernardino to offer scholarships to STEM majors that are transferring to CSUSB. Currently, the Math department is working with CSUSB in establishing a new high school math course that would better prepared high school student to Math higher education.

F. "Providing career and technical education and work force development programs and courses that give students the knowledge, skills, and certification necessary for success in the workplace.

The Math department offers various Math courses to provide Mathematical skills required in the work force. Basic Math course are offer to students that are not Math majors and are required to master basic Math skills. Lower division Math courses are offered to students that will transfer to a four-year institution and are required to take a lower level math course.

G. Using institutional research to further develop courses, programs, and services.

We have attempted to work with other departments to retrieve information /data that we also work with key personnel who have the knowledge to gather data needed that tells the story of our program and we then attempt to make the necessary changes to meet the needs of our students.

H. Increasing access to all students by continuing to promote and develop our extensive distance education program.

Students who enter our program have the ability to take all courses online except Math 101.We offer a variety of resources to enrich their college and learning experience; for example all materials posted for the course, such as power-points, and syllabi meet the ADA requirements established by the state law.

2. Program Description and Overview

Assume the reader does not know anything about the Program. Describe the Program, including—but not limited to—the following:

A. Organization, including staffing and structure

There are three full-time Math instructors. There are approximately 10 math adjunct instructors. The Math program provides basic courses as well as transfer courses to complete a Bachelor's degree at a four year university. The program also provides classes for those who are interested in continuing their education but may not be pursuing a degree.

B. Who do you service (including demographics)?

We have a very diverse group of students varying in age, gender, ethnicity, and experiences. We have a variety of students: some are first full-time students, some work full-time taking courses in the evening or online, some are returning students who take a class for their professional growth and development, and others have returned to college to pursue a new career. We have students that represent our community enrolling in our courses, or they are students from other areas within California, other states within the United States, and in some cases, other countries, as we serve many military families.

C. What kind of services does your unit provide?

The Math department provides developmental math courses and lower division math courses. Math courses are provided in both mornings and afternoons.

D. How do you provide them?

Face-to-face, online, and hybrid courses are offered every semester except Math 101. Early morning classes are offered on campus in which times vary throughout each semester.

E. Does the program have a degree or certificate?

The department offers a Math & Natural Sciences A.S

3. Program Data

A. PERFORMANCE DATA

Discuss the program's performance on the specific data items listed below:

1) Full-time/Part-Time Faculty Ratio

TOTAL FTEF FOR FULL TIME = 2.61+7.07=9.68
TOTAL FTEF FOR PART TIME = 6.01+1.43= 7.44
FULL TIME/PART TIME FACULTY RATIO =9.68 TO 7.44

	TRADITIONAL	ONLINE
2) Course Completion Rate	COURSE COMPLETION RATES 2014 TO 2015 MATH 101 0.94 MATH 2 0.76 FT MATH 2 0.80 PT MATH 3 0.79 PT MATH 50 0.97 FT MATH 50 0.83 PT MATH 55 0.82 FT MATH 55 0.88 PT	COURSE COMPLETION RATES 2014 TO 2015 MATH 1 0.87 FT MATH 101 0.87 FT MATH 101 0.83 PT MATH 3 0.96 PT MATH 3 0.82 PT Math 4a 0.95 FT MATH 4B 100 FT MATH 50 0.90 FT MATH 50 0.84 PT MATH 55 0.98 FT MATH 55 0.96 PT
3) Course Success/Retention Rate	SUCCESS RATE FOR 2009-14 IS 0.65	
4) WSCH/FTEF Ratio		
Full-time:	441.6	478.9
Part-time:	381.4	611.4
5) Fill Rate	FT FILL RATE 0.92 PT FILL RATE 0.79	FT FILL RATE 0.61 PT FILL RATE 0.82

Reflect on the data above:

B. PROGRESS ON PROGRAM LEVEL OUTCOMES (PLOS) AND STUDENT LEARNING OUTCOMES (SLOS)

1) List your Program Level Outcomes (PLOs).

No program level outcomes have been created.

2) Summarize the progress you have made on Program Level Outcomes.

3) Summarize the progress made on course-level outcomes and assessments; use specific data, if possible.

4) Describe any program, course, and/or instructional changes made by your program as a result of the outcomes assessment process.

5) Reflecting on the responses for #2 and #3 above, what will you implement for the next assessment cycle?

C. SUPPORTING ASSESSMENT DATA *(See Handbook for additional information)*

1) Provide a list of any additional measures *(not included in 3.A.)* that you have chosen to gauge your program's effectiveness *(e.g.: transfers, degrees, certificates, satisfaction, student contacts, student headcount, Perkin's data, etc.).*

1a) If this is a CTE program ending with a certificate or degree, include data on employment opportunities, compliance with advisory recommendations, and fiscal viability of program. *(Include labor market and demand information using resources in CTE and the PR Handbook.)*

2) Summarize the results of the measures listed in #1 above:

3) What did you learn from your evaluation of these measures, and what improvements have you implemented, or do you *plan** to implement, as a result of your analysis of these measures? *(*List any resources required for planned implementation in #10: Resources.)*

D. TWO YEAR SCHEDULING PLAN

1) What is the program's Two-Year Scheduling Plan?

Fall Semester	Spring Semester	Fall Semester 2nd year	Spring Semester 2nd year
Math 101 Math 50 Math 55 Math 2	Math 1 Math 101 Math 50 Math 55	Math 4A Math 4C Math 101 Math 50	Math 4B Math 101 Math 50 Math 55

Math 3	Math 2 Math 3	Math 55 Math 2 Math 3	Math 2 Math 3

2) What changes, if any, have been made since the last Program Review?

This is the first time math program review has been created.

3) How effective has the Two-Year Scheduling Plan been in meeting student needs and educational goals? If this is a degree or certificate pathway, can students complete in two years?

4) Reflecting on the responses above, what are the goals for the next program review cycle?

4. Curriculum

A. List any <u>new</u> courses or program changes since the last program review. Be sure to include if any new courses have approved prerequisites or corequisites.

NO NEW MATH COURSES HAVE BEEN CREATED

B. Verify currency of curriculum: Other than above, what changes have been made in the curriculum since the last full program review? (*Updates, delivery mode changes, archives, deletions, revisions, etc.)*

NO CHANGES HAVE BEEN MADE

1) CURRICULUM CURRENCY: Verify that all Transfer Level Courses are current and aligned for transfer. *(May require reviewing ASSIST or meeting with Articulation Officer.)*

All transfer level course are aligned and reviewed in ASSIST. C-ID descriptors are aligned to out transfer level math courses.

2) CURRICULUM DEVELOPMENT: Verify that all textbooks on Course Outlines of Record (COR) are up to date. Normally, textbook editions should be within five years for articulation. *(Contact Articulation Officer for additional information.)*

Course outlines need to be verified and update textbooks are up to date.

C. List any courses not in full compliance with appropriate guidelines, including ASSIST, C-ID, Curriculum Committee, prerequisite validation, etc. *(NOTE: Any courses that have not been updated in the past six years may not be in compliance. See Curriculum Manual or Articulation Officer for additional information, if necessary.)*

ALL COURSES ARE COMPLIANCE WITH APPROPRIATE GUIDELINES.

D. Curriculum Development: What is the plan for maintaining the currency and viability of your curriculum *(including all modes of delivery)*?

The student learning outcomes for each Math course needs revision to maintain currency and viability of the curriculum.

5. Internal Factors *(see Handbook for additional information)*

A. **Strengths:** *Current aspects of the program or department that serve it and its future well. These aspects include what it does well, what it's known for, what it takes pride in, and so forth. Strengths represent competencies or characteristics that the department or program may wish to enhance or preserve actively, even aggressively.*

All of our classes traditionally make and many close during registration. Enrollment is not a problem as many students within the institution need Math. A major strength in the Math departments within the program lies in the diversity of the courses offered. Math 101, Math 50, Math 55, Math 2, and Math 3 are offered every semester. Online courses and evening classes are offered in the Math department departments. There is currently no major weaknesses with respect to curriculum in any of the Math courses excluding the revision of the Student Learning Outcomes. Department strengths include dedicated faculty, faculty engaged in student success initiatives, and professional development. Faculty involved in basic skills initiative and improvement of distance education.

B. **Weaknesses:** *The program or department's **internal** vulnerabilities. These are areas that, if not addressed, could become liabilities, or could contribute to an erosion of the department's capacities and future growth. They represent areas where the organization needs to improve if it is to be successful for the long term.*

Ongoing collaboration between part-time and full-time Math instructors is a challenge. In addition, upper division courses such Trigonometry, and Calculus need to be offer every semester to have a stronger department. Statistics needs to be offer face-to-face frequently instead of online as Math 2 has shown low success rates. Also, there is a lack of use of technology in the classroom including both instructor and students. Course curriculum needs to be updated to match C-IS descriptors and is up to date with the use of textbooks.

6. External Factors *(see Handbook for additional information)*

A. **Opportunities:** *Current trends and events occurring **outside** the department that, if taken advantage of, are likely to have a positive effect on its long-term success. Examples may include: realistic training opportunities; industry trends; revenue-generation opportunities; development of new tools or technology to help manage workload.*

Job Market:
The math requirement for the degree is the general Math 55 requirement for the two-year degree. Most of the majors in the program are in the allied health fields in which the demand far exceeds the number available. Therefore, the job market, at this time, is not a critical limiting factor

B. **Threats:** *Current trends and events occurring **outside** the department or program that could jeopardize its success represent potential threats. Examples may include: state, regional, or institutional economic/budget climate; loss of support services; seasonal fluctuations in workload.*

Notification of any articulation changes usually comes from the counselors; for example, the changes in math requirements for science and changes in the structure of general chemistry. The two-year programs have added requirements and changed existing requirement. The changes in requirements have the greatest effect on our students.

7. Continuing Education/Professional Development

A. **What continuing education and/or professional development activities have program/unit members attended during the current cycle?**

There were professional development activities members in the math department participated. The RP group conference, Regional Phi Theta Kappa are two conference a member attended. Also, a member participated in the SI training in Kansas City.

B. How did this benefit your department and the College?

Professional conventions and conferences are a good platform to get trained, and interact with people. The knowledge that was gain from this conferences was shares to the faculty across the college during faculty meetings.

C. What are the plans for continuing education and/or professional development in the upcoming cycle?

The math departments plans to continue to participate in professional development. Continue to work in implementing SIleaders in the classroom is in the math department agenda. Also, continue to work with counselors implementing multiple measures to increase student success.

8. Prior Goals/Objectives

- Briefly summarize the progress your program has made in meeting the goals and objectives identified in the most recent Program Review or Annual Update. *(Include measurements of progress or assessment methods.)*
- If the program does not have prior goals and objectives, please explain.

No goals have been created.

9. Goals/Objectives/Actions (ACTION PLAN)

A. GOALS: Formulate Program Goals to maintain or enhance program strengths, or to address identified weaknesses.

B. ALIGNMENT: Indicate how each Goal is aligned with the College's Strategic Priorities.

C. OBJECTIVES: Define Objectives for reaching each Goal.

D. ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE: Create a coherent set of specific steps (Actions/Tasks) that must be taken to achieve each Objective.

E. OUTCOMES: State intended Outcomes and list appropriate measures and assessment methods for each Outcome.

F. ADDITIONAL INFORMATION: This area provides for the additional communication of information necessary to further "close the loop" on the goal or action plan, as it relates to Institutional Planning. This may include references to other institutional documents, such as governing or compliance documents (i.e. Board Policy, Administrative Procedures, Title V), institutional planning documents (i.e. Strategic Plan, Educational Master Plan, Facilities Plan, Technology Plan), or Board, Presidential, Supervisory or Departmental recommendations or goals, etc. *(See Handbook for additional examples.)*

Complete the following table with your Program's **ACTION PLAN**, which must include a **minimum of 3 goals**:

ACTION PLAN						
GOAL		ALIGNMENT WITH BCC STRATEGIC PRIORITIES	OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
#1	Use of technology in math courses.	*Foster an innovative learning environment that respects diversity.* *Provide students a successful college learning experience*	#1		Currently, basic technology is in used in some courses to demonstrate course content.	• Technology provides multiple representations of concepts. For example, the concept of a "rate" can appear as the speed of a moving character, the slope in a graph, and a coefficient in an equation. With technology, these can be linked, so that a student who makes the slope "steeper" in a graph can see that this implies a bigger number in the equation and a faster motion an animation. • Technology engages students in a classroom in working on mathematics together. For example, students can collaborate to make a family of related functions to explore a pattern of variation, with technology helping to combine and integrate

ACTION PLAN						
GOAL		ALIGNMENT WITH BCC STRATEGIC PRIORITIES	OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
						their unique contributions. • Technology provides students with more rapid feedback on the correctness of their work, enabling them to better monitor and focus their own learning.
			#2			
			#3			
	Additional Information:					
#2	Align/revamp course curriculum to make C-ID descriptors.	*Promote and support student engagement*	#1		Examining course curriculum and determining to match C-ID descriptors	This will make sure that our transferable courses are accepted by four year institutions.
			#2			
			#3			
	Additional Information:					
#3	Implement an SI program for math courses.	*Foster an innovative learning environment that respects diversity.* *Provide students a successful college learning experience*	#1		Attended the SI training in Kansas City. Worked with faculty in creating a plan that will fit our institution needs.	The outcome of this goal is to increase students' success. Success rates will analyzed on courses that implemented SI leaders.
			#2			
			#3			
	Additional Information:					

10. Resources Required

List all significant resources needed to achieve the objectives shown in the table above, including personnel, training, technology, information, equipment, supplies, and space. Every request for additional resources must support at least one objective.

Also list any resources required to implement planned improvements noted in 3.C.3)

IMPORTANT: A BUDGET ALLOCATION PROPOSAL must be completed and submitted for EACH new resource requested.

Goal #	Objective #	Resource Required	Estimated Cost	BAP Required? Yes or No	If No, indicate funding source

Annual Update #1 Academic Year:

1. Progress on Program Level Outcomes (PLOs) and Student Learning Outcomes (SLOs) **(from #3B of full PR)**

A) List your Program Level Outcomes:

B) Summarize the progress you have made on Program Level Outcomes (PLOs):

C) Summarize the progress you have made on course level outcomes and assessments (SLOs):

D) Describe any program, course, and/or instructional changes made by your program as a result of the outcomes assessment process.

E) Reflecting on the responses for B) and C) above, what will you implement for the next assessment cycle?

2. GOALS AND OBJECTIVES (Taken From #9--Action Plan--of FULL Program Review)

GOAL		OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
#1		#1			
		#2			
		#3			

Goal #1 Annual Update: (Assess progress made toward goal attainment)

GOAL		OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
#2		#1			
		#2			
		#3			

Goal #2 Annual Update: (Assess progress made toward goal attainment)

GOAL		OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
#3		#1			
		#2			
		#3			

Goal #3 Annual Update: (Assess progress made toward goal attainment)

3. Resources Required

List all significant resources needed to achieve the objectives shown in your action plan, including personnel, training, technology, information, equipment, supplies, and space. Every request for additional resources must support at least one objective.

Also list any resources required to implement planned improvements noted in 3.C.3)

IMPORTANT: A BUDGET ALLOCATION PROPOSAL must be completed and submitted for EACH new resource requested.

Goal #	Objective #	Resource Required	Estimated Cost	BAP Required? Yes or No	If No, indicate funding source

Annual Update #2 Academic Year:

1. Progress on Program Level Outcomes (PLOs) and Student Learning Outcomes (SLOs) **(from #3B of full PR)**

A) List your Program Level Outcomes:

B) Summarize the progress you have made on Program Level Outcomes (PLOs):

C) Summarize the progress you have made on course level outcomes and assessments (SLOs):

D) Describe any program, course, and/or instructional changes made by your program as a result of the outcomes assessment process.

E) Reflecting on the responses for B) and C) above, what will you implement for the next assessment cycle?

2. GOALS AND OBJECTIVES (Taken From #9--Action Plan--of FULL Program Review)

GOAL		OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
#1		#1			
		#2			
		#3			

Goal #1 Annual Update: (Assess progress made toward goal attainment)

GOAL		OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
#2		#1			
		#2			
		#3			

Goal #2 Annual Update: (Assess progress made toward goal attainment)

GOAL		OBJECTIVE		ACTIONS/TASKS REQUIRED TO ACHIEVE OBJECTIVE	OUTCOMES, MEASURES, and ASSESSMENT
#3		#1			
		#2			
		#3			

Goal #3 Annual Update: (Assess progress made toward goal attainment)

3. Resources Required

List all significant resources needed to achieve the objectives shown in your action plan, including personnel, training, technology, information, equipment, supplies, and space. Every request for additional resources must support at least one objective.

Also list any resources required to implement planned improvements noted in 3.C.3)

IMPORTANT: A BUDGET ALLOCATION PROPOSAL must be completed and submitted for EACH new resource requested.

Goal #	Objective #	Resource Required	Estimated Cost	BAP Required? Yes or No	If No, indicate funding source