Natural Science: Mathematics
Instruction

Vision/Narrative

The Mathematics program is one of the four degree programs in the Natural Science Department. We offer A.A. and A.S.-T degrees in Mathematics. The program offers both developmental and transfer level courses for STEM and non-STEM majors.

Our primary goals are:

1. To increase retention and first time success rates of students enrolled in transfer level math courses (Math 5, Math 8A, Math 12, Math 14).
• In order to comply with the requirements of AB 705, we are introducing three new co-requisite support classes (Math 215, 216, and 218) to support students in Math 5, 6, and 8A.
• A new placement process will be implemented which will allow more students to enroll directly into a transfer level course.
• Expand statistics offerings and support for statistics instructors and students.
-Add more sections of online/hybrid statistics sections
-Train additional statistics faculty and tutors
-Participate in statistics knowledge exchange for professional development
-Focus on project-based learning in statistics courses

2. To implement guided pathway supports for all STEM students in our math classes to increase success rates in our Precalculus and Calculus courses and transfer rates of our STEM students to four year universities. These guided pathway supports include:
• A robust STEM Center which offers support in all transfer level STEM coursework including math. The STEM Center provides tutoring, a lending library of books, solutions manuals , laptop computers, and graphing calculators, other academic supplies and supports.
• A well-developed tutor training program for our student tutors and SI leaders in math.
• A full-time STEM counselor who specializes in advising our students on STEM pathways.
• Injection of broad based information on STEM careers and transfer options into our core Precalculus and Calculus classes that all STEM majors must take.
• Pre-semester offerings of “Math Bootcamps” for all transfer-level STEM based math classes to hone the math skills needed for success, as well as concurrent Academic Excellence Workshops in our Calculus, Differential Equations and Linear Algebra courses to support our students enrolled in these courses.
• A STEM Summer Bridge program to support our incoming freshmen that are interested in or already majoring in a STEM based degree. This program provides an introduction to Gavilan College, exploration of STEM careers and transfer programs, and mathematical workshops to prepare students for college level math.
• STEM Academies for existing and new students that are focused on a transfer level math course. The goal of the academy is to promote success by creating a community of learners that are supported by each other, faculty mentors, our stem counselor and other clubs and activities.

3. To implement the immersion model into transfer level classes.

• The curriculum for the condensed Pre-calculus course has been developed and approved, and we are now in the process of preparing the fundamental materials to ensure we start strong. This semester – Fall 2018 – we are experimenting with teaching the Math 8A class (Pre-calculus) together with the supporting Math 415 class – this experiment will provide the necessary data to choose the best possible format for the co-requisite model. We will be analyzing these results as soon as the semester is over.
• The next major project is restructuring the existing pre-transfer acceleration classes (Math 235 and Math 411) to be in compliance with AB 705. We plan to implement the necessary adjustments and modifications to these classes in the upcoming Spring semester.
• In addition, the Math 412 support courses we launched three semesters ago which initially had only 7 people interested, have experienced an amazing surge in demand with 43 students registered last semester. Now to avoid potential issues with repeatability and to allow students the chance to take a math refresher course twice in one semester - we have developed a curriculum which splits Math 412 into Math 412A and Math 412 B which we will start in Spring 2019.
• The boot camp program remains very popular – we will continue to work on maximizing our advertising of the program and working with students who are interested in the program but have time constraints, fears of high math load, etc.

4. To investigate open-source textbook options for possible implementation into our courses.

• These resources are free for students to download electronically, cost little for them to buy in hard copy, and permit instructors to modify content to their classroom needs. One website to explore for open-source options is myopenmath.com.

5. To utilize technology for classroom instruction and for information-sharing purposes.

• Classroom Instruction: As an example, the website desmos.com features an excellent free graphing calculator that instructors can utilize to teach the basics of graphing; create curve animations; build regression models for sets of data; and demonstrate "ruler and compass" geometry. It also has engaging classroom activities that teachers can use for fun, problem-solving lessons that offer a refreshing change to the traditional lecture. Other websites exist that, too, can enhance the classroom learning experience-- kahoot.com is another example.
• Information-Sharing: Instructors have favorite lessons or projects that we have either developed on our own or discovered elsewhere. We plan to upload the contents of these lessons onto our Math Department Canvas page so that we all can easily access each other's effective resources.

Feedback from Supervisor / Dean

Program Objective #2491
Natural Science: Mathematics
Instruction

Program Objective 1: Expand tutoring services and hire professional tutors to staff the Math Lab, STEM Center and off sites.

Strategy and Goal(s):

Strategy #2: Increase student completion and meet institutional goals, improve student services and enhance curriculum and programs.
Goal #4: Evaluate gaps in student outcomes and identify and implement programs and services to increase student achievement.

IEC Program Review:

No: With the implementation of AB 705, additional tutoring support is needed for students enrolled in transfer level courses. In particular, statistics (Math 5) and precalculus (Math 8A). We are in need of tutoring support at the off sites.

Progress:

No- None -

Activity 1: Hire an additional Math Lab program specialist to expand tutoring services to the off sites.

Personnel Request

Job Classification	Quantity	FTE	Amount ($)	Fund Source / Type
Classified	1	50%	$ 30000.00	General Fund / On-Going

Non-Personnel Request - *none*

Activity 2: Hire professional tutors to staff the Math Lab, STEM Center, and offsites.

Personnel Request

Job Classification	Quantity	FTE	Amount ($)	Fund Source / Type
Other: *Student workers*	5	%	$ 20000.00	General Fund / On-Going

Non-Personnel Request - *none*

Rankings:

Ranker	Comments	Rank
Dean		
Vice-President		
Budget Committee		
President's Council		

Program Objective #2492
Natural Science: Mathematics
Instruction

Program Objective 2: Expand professional development in project based learning, technology and statistics instruction

Strategy and Goal(s):

Strategy #2: Increase student completion and meet institutional goals, improve student services and enhance curriculum and programs.
Goal #3: Develop professional development activities for faculty and staff to improve teaching, curriculum, and service delivery across campus.

IEC Program Review:

No: With the implementation of AB 705, more instructors will be teaching transfer level courses and will need training.

Progress:

No- None -

Activity 1: Provide training for statistics instructors.

Personnel Request

Job Classification	Quantity	FTE	Amount ($)	Fund Source / Type
Other: *Stipend*	1	%	$ 5000.00	General Fund / One-Time

Non-Personnel Request - *none*

Activity 2: Provide training in project based learning.

Personnel Request

Job Classification	Quantity	FTE	Amount ($)	Fund Source / Type
Other: *Stipend*	1	%	$ 5000.00	General Fund / On-Going

Non-Personnel Request - *none*

Activity 3: Provide training in using technology in the classroom.

Personnel Request

Job Classification	Quantity	FTE	Amount ($)	Fund Source / Type
Other: *Stipend*	1	%	$ 5000.00	General Fund / On-Going

Non-Personnel Request - *none*

Rankings:

Ranker	Comments	Rank
Dean		
Vice-President		
Budget Committee		
President's Council		

Program Objective #2510
Natural Science: Mathematics
Instruction

Program Objective 3: Hire a new full-time Mathematics Instructor

Strategy and Goal(s):

Strategy #1: Optimize enrollment, course offerings, and services to reflect the findings of the 2017 Educational Master Plan (EMP).
Goal #1: Create an institutional approach to offer and integrate student outreach activities, recruitment, assessment, orientation, counseling, retention and follow-up efforts, with particular attention to educationally under-represented student populations as reflected in the demographic information of the EMP.

IEC Program Review:

Yes, this Objective is based from the last IEC Program Review.

Progress:

No- None -

Activity 1: Hire a new Mathematics Instructor

Personnel Request

Job Classification	Quantity	FTE	Amount ($)	Fund Source / Type
Faculty	1	100%	$ 65000.00	General Fund / On-Going

Non-Personnel Request - *none*

Rankings:

Ranker	Comments	Rank
Dean		
Vice-President		
Budget Committee		
President's Council		