Plans for Mathematics >> 2020 - 2021 Mathematics CHC Instructional Program Review 2020-2021

Name : 2020 - 2021 Mathematics CHC Instructional Program Review 2020-2021
Principal Preparer : Brandi Bailes
Planning Participants : Brandi Bailes

Version: 56
Group: 2020 - 2021
Type: CHC Instructional Program Review 2020-2021
Last Modified On: 10/28/2020 10:23:27 PM
Last Modified By: Brandi Bailes
State: Submitted (**Finalized**)
State By: Brandi Bailes

Instructions

Please respond to the following questions. Please consult the Integrated Planning and Program Review Handbook for detailed instructions, the timeline for due dates, and the schedule for the four-year plan schedule.

1. Mission

a. Tell us your unit's mission: Provide a mission statement for your unit that clearly and succinctly describes your unit's purpose, idealistic motivations, and change it hopes to inspire.

b. Alignment with the college Mission: **Rubric Item** (Mission Alignment): The Mission of Crafton Hills College is to advance the educational, career, and personal success of our diverse campus community through engagement and learning. **In what ways does your program advance the mission of the college?**

a) The Department of Mathematics has a mission to advance the educational, career, and personal success of our diverse campus community by helping them achieve their mathematical potential with increased graphical, data, notational and numerical literacy through applications of methods and mathematical modeling.

b) The Department of Mathematics mission aligns with Crafton Hills College's mission in supporting the advancement of mathematical intelligence. High mathematical intelligence fosters the empowerment of students to achieve their educational, career, and personal success of our diverse campus community. In our data motivated modern era, mathematical intelligence allows students to make decisions about their education, career, and personal success (e.g.. health, finances, and security) that are based on sound reason and concrete data evidence.

2. Description of Program

a. Organizational Structure and Staffing

b. Describe any activities in addition to instruction that you provide.

c. Describe any alternative modes of instruction and schedules of delivery: e.g.: online, hybrid, early morning, evening services.

d. **Rubric Item**: Describe how your curriculum is up-to-date and Needs-Based. Base the description on surveys, labor market data, transfer patterns such as GE, IGETC, CSU, AA-T, or AS-T, accreditation standards, and/or articulation agreements. Consider the results of your most recent curriculum reviews in this section.

e. **Rubric Item**: Attach your scheduling matrix to show when courses in your area are offered. Click here for sample!

a. Organization (including staffing and structure).

The Department of Mathematics, within the Language, Arts, and Mathematics Division at Crafton Hills College, consists of 7 full-time faculty and roughly 30 part-time instructors. The department focuses on transferable courses, but does offer two courses below transfer-level. In keeping with student success, of our two courses below transfer level, Math 095 is still degree applicable and being retained while Math 085, which is not degree applicable, is being phased out.

b. Describe any activities in addition to instruction that you provide.

The Department of Mathematics provides or supports the following activities in addition to instruction:

The M∀TH (Mathematics For All Thoughtful Humans) Club

Math Club mainly focuses on studying various math concepts for the AMATYC (American Mathematics Association of Two-Year Colleges) exam, a test our students take during both the fall and spring semesters. The top two scorers on the exam from everyone that took it at CHC receive scholarships, so it's worth taking to sharpen your math skills!

The AMATYC (American Mathematical Association of Two-Year Colleges) Exam

The AMATYC is the American Mathematical Association of Two-Year Colleges which offers a Annual Student Math League Competition.

Statistics Honors Course Offerings

In support of the College Honors Institute (CHI) this course provides highly motivated students who have demonstrated outstanding academic achievements the opportunity to participate in a program that challenges and deepens students' scholarship, creativity, and commitment. The math department has created Math 110H and intends to expand offerings.

"Wayne Milloy Scholarship" and the "AMATYC Award."

In support of participation in the AMATYC Exam, the math department offers an annual award for the local first and second place winners.

From the May 10th 2019 Math Department meeting minutes:
AMATYC Student Math League Competition

- Crafton Award - $300 and $200. Riggs suggests giving this out at student recognition dinner.
- National award $5k, $3k, and $2k.

The math department is also responsible for selecting the winner of the Wayne Milloy award for Outstanding Achievement in the Calculus Series.

STEM Talks

The department has worked with the STEM center to coordinate the Row Integration by Parts workshop presented by Dr. John Rock from Cal Poly Pomona, which was an interactive workshop that drew an incredible 55 students. Integration is a mathematical process that allows you to calculate an area under a curve. Traditionally, a single problem of this type can take up to 45 minutes to solve (this is considered fast). Dr. Rock's update to the Integration method allows students to break the problem into smaller pieces that, when combined, provide the final answer in approximately 15 minutes (taking us from fast to ludicrous fast).

The department plans to continue this work as we move back into face-to-face interactions.

Other Campus and District Engagement

The Department of Mathematics also actively engages with the Tutoring Center in conjunction with the part-time math instructor embedded within the center to foster student success in all math courses.

The math department faculty is also highly engaged in college and district wide work, including service in Academic Senate, District Assembly, Crafton Council, TESS Executive, Educational Master Plan, both local and district Budget Committees, SBCCDTA, Curriculum Committee, Chairs Council, Guided Pathways, Dual Enrollment, and (IEAOC) Institutional Effectiveness, Accreditation, and Outcomes. The Math Department recognizes that all students are math students at CHC and uses this committee work, along with many other commitments on campus, to support the success of our students.

c. Describe any alternative modes of instruction and schedules of delivery: e.g.: online, hybrid, early morning, evening services.

The Department of Mathematics offers online, hybrid, early morning, evening courses, emergency remote instruction (ERI) as well as co-requisite courses to support student success, student engagement, and labs to support computer skills such as Excel, LATEX, and MATLAB.

Our Chairs past and present along with the department as a whole recognizes that nearly every student at CHC will need to take at least one math class during their tenure at CHC. For this reason, we strive to have as many offerings in as many different modalities as possible. We have supported both full and part-time instructors in the DE Certification process and ensured that our full-time instructors are placed on committees and in assignments such as the faculty union that can support the growth of offerings for our students in balance with a reasonable workload for our faculty.

d. Rubric Item: Describe how your curriculum is up-to-date and Needs-Based. Base the description on surveys, labor market data, transfer patterns such as GE, IGETC, CSU, AA-T, or AS-T, accreditation standards, and/or articulation agreements. Consider the results of your most recent curriculum reviews in this section.

The Department of Mathematics offers C-ID approved courses to increase transferability and student success. Mathematics and statistics is needed to help our students understand our data based society. This is especially evident in recent events, including COVID-19 and the market fluctuations of our current climate. The department actively works with the Articulation Officer, VPI, Curriculum Committee, and all departments on campus to insure that our classes meet the requirements for transfer and support CHC's programs.

In regards to our transfer requirements. the Department of Mathematics offers an AS-T and an AA and exceeds the requirements of AB-705. We would like to make note that the AB-705 report presented to the board on August 13, 2020 mixed students with co- and pre-requisites, which did not focus on whether or not the co-requisite courses increase student success. In light of this, the Department plans to work with CHC's Office of Institutional Effectiveness Research and Planning (OIERP) to collect disaggregated data to help provide evidence in support of our current AB-705 efforts.

The Department continues to update courses as need for the 6-year review. All 6-year review courses are discussed at department meetings, where SLO data is examined as needed, so that curriculum can be updated to support student success.

e. Rubric Item: Attach your scheduling matrix to show when courses in your area are offered.

Here is a link to the matrix.

3. External Factors with Significant Impact

What external factors have a significant impact on your program? Please include the following as appropriate:

a. Budgetary constraints or opportunities
b. Competition from other institutions
c. Requirements of four-year institutions
d. Requirements imposed by regulations, policies, standards, and other mandates
e. Job market
  i) Requirements of prospective employers
  ii) Developments in the field (both current and future)

a. Budgetary constraints or opportunities.

The Department of Mathematics no longer has funds. Historical funds have been diverted from the department. The Department continues to work with the college to create a budget. Until such a budget is provided, documented, and discussed with the department we cannot attest to its constraints or opportunities.

b. Competition from other institutions.

Mt. San Jacinto College has located a satellite campus in Banning, CA. They also offer college course work at both the Beaumont and Banning high schools, which include mathematics courses such as College Algebra and Calculus I (http://www.msjc.edu). Due to the close proximity of these locations, they likely could compete for enrollment with the mathematics program here at Crafton Hills. Crafton Hills's response to this has been to collaborate with RUSD to begin offering College and Career Access Pathway (CCAP) courses in statistics at Redlands East Valley and Redlands High School. Crafton Hills is also working with YCJUSD to offer dual enrollment courses in mathematics. The plan was to begin offering math courses in FALL 2020 but they have been postponed due to instruction being remote.

Another external factor that could have a significant impact on student enrollments at Crafton Hills College are the multitude of online courses that surrounding community colleges offer such as College of the Desert, Mt. San Jacinto, Victorville College, RCC, for profit institutions, and other colleges. Further, four-year institutions are also providing online coursework that would be in direct competition with courses offered at Crafton Hills College. This provides students with an option that the Mathematics Department does not currently afford their students. The Department has increased its online offerings to combat this area of competition. It has also worked to increase the number of online certified instructors for the math department. We have increased from 2 full-time and 3 part-time to 5 full-time and 10 part-time online certified instructors.

Due to the lower salary schedules for part-time instructors in our district, the competition with other schools makes it difficult to obtain and retain quality adjunct instructors.

c. Requirements of four-year institutions.

To support the transfer process, the Mathematics Department has articulation agreements with numerous four-year institutions, including the University of California Riverside (UCR) and California State University San Bernardino (CSUSB). The Articulation System Stimulating Interinstitutional Student Transfer (ASSIST) offers both students and educators a means to agree upon and identify which courses

fulfill particular requirements (http://www.assist.org/). The Department of Mathematics continuously strives to support students and improve the transfer process.

The Mathematics AA-T degree has been approved and all but a small portion of our transfer-level courses have been C-ID approved. The remaining portion is in the process of being C-ID approved when appropriate.

d. Requirements imposed by regulations, policies, standards, and other mandates.

The two biggest initiatives currently affecting our department are AB 705 and Guided Pathways. The Department of Mathematics has done significant work as a result of specific AB 705 mandates and Guided Pathways suggestions. Most notably, we have done the following:

- Eliminated basic skills courses.
- Included multiple measures assessment.
- Created non-credit courses and programs culminating in the Basic Skills Math Certificate.
- Greatly reduced below-college-level course offerings.
- Modified curriculum.
- Greatly decreased program completion time from potentially five semesters to one semester for the Statistics Pathway and two semesters for the STEM Pathway.
- Included embedded tutors in a variety of courses.
- Offered participation in AVID conferences and workshops, AB 705 workshops, the California Acceleration Project conference, and CMC3 conference.
- Partnered with local districts, YCJUSD and RUSD, to offer CCAP classes or dual enrollment classes in mathematics at Yucaipa High School, Redlands East Valley, and Redlands High School.

e. Job market -Requirements of prospective employers and Developments in the field (both current and future).

i. Requirements of prospective employers.
More students are seeking a college education and the number of re-entry students is also on the rise. Students are seeking to obtain new job skills or make career changes. The nonprofit organization known as ACT (http://www.act.org/) has identified real-world skills that employers believe are critical to job success. These skills include but are not limited to basic numeracy skills, problem-solving strategies, analytical and research skills, and the ability to be critical thinkers. Being technologically literate and proficient requires all the skills previously mentioned and is a skill that, without question, is important in today's society. Mathematics courses provide students a means to obtain all the skills just mentioned. The mathematical skills that one possesses can have a direct impact on one's ability to be hired and obtain the career they desire. This is leading to an increase in the demand for mathematics courses.

ii. Developments in the field.
Increased use of data sciences in all fields has led to an increase in the need for statistical

education, which the department has met with increased sections of statistics and support classes, the creation of a statistics honors course, and the recruitment of instructors with robust skills in statistics.

4. Progress on Outcomes Assessment (Four-Year Question)

Refer to the SLO Cloud to evaluate the results from your program level outcomes and to develop actions reflected in your program review action plan (i.e. Question 10). **Rubric Item**: Program Learning Outcomes

a. Please summarize **Program Level Outcomes (PLO) assessment results**. Include a discussion of whether or not the program met its target for each PLO.
b. Please describe any program/course and/or instructional improvements you plan to make as a result of the PLO assessment(s).
c. What objective(s) or action step(s) will you add to Question 10 as a result of the PLO assessment(s)? If none, please explain.

a. Our PLOs are broken down into four main areas that are essentially attitude, notation, calculations and, applications. Our target is 70%. All of our PLOs exceed this target. More granular data, students that drop vs students that did not take the final vs students that did not pass the class would be useful. There was also a mysterious 5 "N/A" section with about 65 students in it. We are not sure what this category represents. Under normal circumstances, the department would increase our goal. However, due to the number of changes related to AB-705, the department has opted to keep the same goal and closely monitor the PLOs, SLOs, success rates, and retention rates before making adjustments.
    1. Develop a positive attitude or improve their attitude toward mathematics. % 3 or higher = 75.97%
    2. Recognize, define, and use formal mathematic notation as appropriate to the course outline. % 3 or higher = 75.74%
    3. Successfully perform mathematical calculations and applications required for the subsequent course in mathematics. % 3 or higher = 73.64%
    4. Apply mathematical reasoning to a variety of real-life situations. % 3 or higher = 71.32%
    5. N\A % 3 or higher = 75.38%
b. Because of these higher than target PLO results much of the resources requests and activities to support our goals and the PLOs focus on continuing our successful work with AB-705, multiple measures, pathways, etc. Specifically, instructors spoke of the support classes and embedded tutors helping to improve PLO results and the use of best practices learned at CoP meetings. The department of mathematics at Crafton Hills plans to continue encouraging all full and part-time mathematics instructors to participate in the CoP meetings to focus on how to bring students into critical thinking for word problems in the labs. We have resource requests and activities that both support the research into best practices and the implementation and training of best practices. Note when reading through the information below that board work, worksheets, interaction, and group work have been heavily emphasized as best practices by the math department. Many of these practices were gained by involvement in AVID, CAP, CMC3, and AMATYC workshops and conferences. Additionally, the majority of the comments were given after the math department started working to

include SLO input training in flex-day meetings. There are also mentions of the online training offered by ETC to ensure that new online instructors are confident in their skills. (#3-4 below are reports from instructors, from the SLO Cloud, that emphasize the effective practices that have influenced student success in their classes.)

1. Continue to create an interactive classroom with board problems. More tutoring. More homework to apply what we learn in class. (MATH-251-57 for 2019FA)
2. The COP and using new ways to present material is helpful. (MATH-085-57 for 2019FA)
3. The students that attended class regularly made this class successful. The main thing I can do is get students to be more active in class to make them more eager to attend. Having an embedded tutor really helped with day to day actions. With a class as large as this, having an embedded tutor was great for student interaction. It was also nice having a person the class can talk to rather than being intimidated by the professor. (MATH-102-40 for 2019FA)
4. This Math 110 course benefited very much from the embedded tutor assigned to the course. Students spent considerable time working individually and in groups and, in both situations, our embedded tutor was instrumental in answering student questions and guiding student to a better understanding. (MATH-110-40 for 2019FA)
5. Continued online training for instructors using programs to help instructors teach students online. Also, possible online training for students to show students the basics in being prepared to navigate online instruction.
(MATH-110-20 for 2020SM)
6. Continue to use embedded tutor. Complete training for remote/online instruction. Discover/develop more content such as videos, power point lecture slides online. Discover/develop engaging activities for virtual learning.
These recommendations were gleaned from the instructor comments in the following 5 Sections:
MATH-095-22 for 2020SP
MATH-103-40 for 2020SP
MATH-103-45 for 2020SP
MATH-095-20 for 2020SM
MATH-995-22 for 2020SP

c. In addition to continuing work in part b, we have expanded our actions to help support us in gathering and reporting lessons learned when resources are supplied. We have also added requests for part-time instructor pay for attending CoP meetings, release for our CoP lead, as well as a math plenary to help reduce the necessary reoccurring workload, such as PPR and Curriculum, and allow full-time faculty to focus on implementing, researching, training, and gathering best practices as these were consistently cited as reasons for student success.

In addition to supporting student success, the department would like to support the affordability of community college education by expanding our use of OER materials. We have requested a stipend for instructors who integrate OER materials in a way that can be easily implemented by additional instructors, e.g. integration into a Canvas shell that can be copied.

Note that the main bulk of this work must be carried out, implemented, and conveyed to part-time faculty by full-time mathematics faculty. We currently have 7 full-time faculty and about 30 part-time faculty. This imbalance is an encumbrance to the further successful work to support PLOs and student success. In addition to this, we have the following from the paper Why Full-Time Faculty Matter Published by ASCCC:

Although part-time faculty offer the same quality in teaching, the benefits of a sufficient complement of full-time faculty members are numerous, from providing essential stability for planning and curriculum functions to providing the levels of availability that students need outside of the classroom. In their book The American Community College, authors Arthur Cohen and Florence Brawer identified a number of functions which are normally performed either entirely or in greater measure by full-time faculty than by part-time faculty:

- Instructional Activities
  - Curriculum Management Activities
  - Periodic Syllabus Revision
  - Joint teaching with Colleagues
  - Interdisciplinary Participation
  - Involvement in Honors Courses
- General Education Involvement
  - Organization of Extracurricular Activities for Students
  - Professional Activities
  - Participation in Educational Associations
  - Disciplinary Associations
  - Community College Associations
  - Service as Department Chair
  - Institutional committee service

These reasons among many others are why additional full-time faculty remains our top goal.

5. Unit's Performance on Institutional Quantitative Effectiveness Indicators

Please discuss your program's performance on each data item below.
a. Instructional Program Health Evaluation Rubric

i) **Rubric Item**: Use Office of Institutional Effectiveness, Research, and Planning (OIERP) data to set a Course Completion Rate target and provide an explanation for the target that has been set. **Click HERE to access your program specific data**.
ii) **Rubric Item**: Use OIERP data to set a Course Success Rate target and provide an explanation for the target that has been set. **Click HERE to access your program specific data**.
iii) **Rubric Item**: What is your FT/PT Faculty Ratio, how is it impacting your program, and student success? **Click HERE to access your program specific data**.
iv) **Rubric Item**: Use OIERP data to set a WSCH/FTEF Ratio target and provide an explanation for the target that has been set. Based on Faculty dialogue what is a feasible WSCH/FTEF (productivity) target for your area? (Note: 525 may not be a realistic target for your area.) **Click HERE to access your program specific data**.
v) **Rubric Item**: The Fill rate target is 80% or higher. Use the data provided by the OIERP and please provide a reason for any deviation from the target. This may involve a discussion around the appropriateness of the cap and how it was set. **Click HERE to access your program specific data**.

i. Our course completion rate target prior to AB-705 was 90%. We have not yet made this goal, but we have come close. Our completion rate is approximately 89.4%. So, we will keep the goal at 90% for now.

ii. The department's course success rate target of 60% was surpassed by 2.7 percentage points. Due to this and the success we have seen with AB-705 and the fact that we have surpassed, met, or nearly met the bulk of our other measures related to PPR, the department has decided to increased our goal to 65%. The

iii. As of 2019-2020, the addition of one full-time faculty member to move us back to our 7 faculty members of 2006 has made us move from 30/70 to 35/65. This is, of course, affecting the program and student success negatively. We lack the proper staffing of full-time math faculty to support our student base. This artificially lowers our success rates. Our success rates are only as high as they are now because of our AB-705 training. However, when those funds disappear, we expect to see a significant drop in completion rates and course success rates. If we cannot hire additional full-time faculty, it is imperative that Crafton Hills College continue to keep funding that supports the training and involvement of our part-time faculty.

iv. The department understands that the ideal WSCH/FTEF ratio is 525 and our data shows that we have consistently fallen short of this ideal. Specifically, 2016 -2017 shows the department's WSCH/FTEF ratio as 427; 2017-2018 shows the department's WSCH/FTEF ratio as 432; 2018-2019 shows the department's WSCH/FTEF ratio as 442; 2018-2019 shows the departments WSCH/FTEF ratio as 438. On average we have fallen short of the ideal 525 by about 89. Based on this analysis, the adjusted mathematics department WSCH/FTEF ratio is 440, as it is a few points higher than the previous 4-year average of 435. To help support this ratio growth, the department is requesting funding for the math faculty member working on the OER materials in hopes that will help with retention since students tend to drop after using the two-week free trial of MyMathLab. The mathematics department feels that our drop rate is higher in our classes than in others. We are making an argument that a lower cap would increase our retention and success rates. As of now, 35 students is too high for one-on-one engagement that is needed for retention in math classes. Our group work with AB-705 is helping. If we are to keep our caps at 35, then we will need more than one embedded tutor in our classes. We specifically need lower caps in Math 250, 251, 252, 265, 266. These are capped at 40 rather than 35. To help us make WSCH/FTEF ratios we would like to lower Math 252 and 266 caps to 25. The mathematics department believes this will help retain students for the entire semester rather than filling for the first few weeks and having a significant proportion drop or skip the final. In addition to course cap adjustments, the department is requesting funding for the math faculty member working on the OER materials in hopes that will help with retention; students tend to drop after using the two-week free trial of MyMathLab expires.

v. As students are required to have math, historically our fill rate has exceeded this requirement. In recent years, our fill-rate has fallen below the 80% target. The department believes this downward fluctuation is due to changes in response to the implementation of AB-705 in addition to the start of the promise program and guided pathways, which have all affected our enrollment in unpredictable ways. Some of the changes the department needed to make were experimental and fully-supported by the college. These experimental classes may have run with very low enrollment, but they were a part of a learning process that the mathematics department needed to conduct in order to support student success with few pre-requisites and a more expedient path to success. There is a new demand that mathematics serves as a gateway and not a gatekeeper to all majors. The math department fully supports this change and the excitement and innovation it has brought to mathematical learning and teaching. This is why the department needs a dedicated math building. That's a logical jump, right? Hear us out: All students take mathematics. Our department would be more successful if it was housed and organized into one cohesive

program where instructors, tutors, and students could all collaborate. Successful math students ensure successful Crafton students.

6. Other Unit-Specific Quantitative and Qualitative Results

a. **Rubric Item**: How do your program student demographics relate to the college demographics? What are the discrepancies? – **Click HERE to view program and college demographics by year**.
b. Summarize the results of any quantitative or qualitative measures not provided in the previous question that you have chosen to gauge your program's effectiveness (e.g.: transfers, degrees, certificates, satisfaction, enrollments, Perkin's data, equity data, student research experience, student clubs, etc.). **Click HERE to access your program specific data on degrees and certificates**.
c. What improvements/changes have you implemented or do you plan to implement as a result of your analysis of the measures illustrated in 6a and 6b?

a. The data between the mathematics department and the college are very similar in general. This is likely due to the fact that all students need mathematics to earn a AA/AS degree, AA-T/AS-T degree or certificate, and/or transfer. After narrowing the data down to our 200 level classes in order to focus on likely STEM majors, we see one of the mathematics department's largest discrepancies to be gender for units at CHC when comparing department data to college data. There has been a historical gender gap among STEM majors. The department and all of STEM has done work to alleviate that gap by promoting works by women, especially BIPOC women, and giving a more accurate representation of historical efforts of women and BIPOC scholars to the advancement of STEM. This effort is not limited to our math department, our STEM departments, or our college. It has been a cultural change represented in such works as our One Book One College text: Spare Parts or the popular movie Hidden Figures. The integration of these ideas into, not just our curriculum, but campus-wide culture will help to alleviate the discrepancy we see in our demographics. The math department has involved itself in campus wide efforts, such as the One Book One College, Hispanic Heritage Month, the Panel Discussion on Race, and the district wide discussions on race. In regard to the data, we would like to note that the comparisons are very difficult to make with the bar graph on the linked tool. It would be helpful to see a side-by-side comparison of the college data to our data or raw numbers to compare rather than bar graphs.
b. Due to near constant changes needed for AB-705 compliance, our focus will remain on basic data measures until changes diminish so that our data can become more stable.
c. We are constantly evaluating our enrollment, retention, and success rates. Our math department meeting agendas and minutes reflect this. Although we do not see the data reflected in the links provided in the tool above, we are aware that certain demographics are underserved and are addressing it through active training and research. As stated above, it would be helpful to see a breakdown of the data for upper division or for just STEM/Mathematics majors as that is where we are likely to see a discrepancy. It would seem that all departments need the option of viewing their major students as well as all students, maybe this functionality can be brought into the tool.

7. Evaluation

Evaluation: You have already provided a description and analysis of the program in questions 1-6, please provide an analysis of what is going well/not well and why, in the following areas:

- Alternative modes and schedules of delivery (e.g.: online, hybrid, early morning, evening services, etc.)
- Partnerships (internal and external)
- Innovation and Implementation of best practices
- Efficiency in resource use
- Staffing
- Participation in shared governance (e.g., do unit members feel they participate effectively in planning and decision-making?)
- Professional development and training
- Compliance with applicable mandates

- Alternative modes and schedules of delivery (e.g.: online, hybrid, early morning, evening, etc.)
    - The mathematics department is exploring alternative modes, especially focusing on growing online and hybrid courses. We met with complications in test proctoring and the department is actively working with administration to resolve them.
- Partnerships (internal and external)
    - The mathematics department is hoping to partner with YCJUSD, RUSD, and the adult schools to help grow our non-credit, CCAP, and dual enrollment programs.
- Innovation and Implementation of best practices
    - The mathematics department has a 0.3 release for a AB-705 lead to conduct research on best practices and train all math faculty based on the results. The mathematics department also has a dedicated math faculty volunteering extended hours to help support OER materials.
- Efficiency in resource use
    - The mathematics department works actively with counseling, DSPS, EOPS, Student Life, and the tutoring/STEM centers to ensure that mathematics students have the resources they need for success and inclusion.
- Staffing
    - The mathematics department continues to work toward gaining full-time mathematics faculty.
- Participation in shared governance (e.g., do unit members feel they participate effectively in planning and decision-making?)
    - We have built a website, send out agendas, post minutes, share to Facebook, and regularly informally converse with faculty to ensure they are a part of shared governance. Our full-time faculty are some of the most active on our campus. For example, of our 7 faculty we have 3 on AS, 3 on the Union Executive board,1 on Guided Pathways, 1 on Dual Enrollment, and 1 on IEAOC. This is in addition to the regular committee work carried out by the mathematics department faculty.

- Professional development and training
    - The mathematics department actively offers PD and training to support AB-705. This is our main focus currently.
- Compliance with applicable mandates
    - The mathematics department is fully committed to complying with all applicable mandates, including AB-705 and accessibility.

8. Vision

a. Tell us your unit's vision: Where would you like your program to be four years from now? Dream big while considering any upcoming changes (e.g.: new buildings, labs, growth, changes in the discipline etc.).
b. Alignment with the college Vision: **Rubric Item** (Vision Alignment): The Vision of Crafton Hills College is to be the college of choice for students who seek deep learning, personal growth, a supportive community, and a beautiful collegiate setting. In what ways does your program advance and align with the vision of the college?

a) The vision of the Department of Mathematics is to assist students on their path to deep learning and personal growth in a supportive community with increased full-time mathematics faculty, robust training that supports inclusion and student success, and a dedicated STEM building; housing it's own tutoring center and full and part-time instructor office spaces, printing center, support staff to serve as a supportive community for all mathematics students, tutors, and faculty.

b) The Department of Mathematics vision aligns with Crafton Hills College's vision by documenting concrete ways in which we can continue supporting the advancement of mathematical intelligence which fosters the empowerment of students to achieve their educational, career, and personal success. In our data motivated modern era, mathematical intelligence allows students to make decisions about their education, career, and personal success (e.g. health, finances, and security) that are based on sound reason and concrete data evidence. The mathematics department's vision allows students to move forward through a mathematics gateway, rather than mathematics being a gatekeeper, to student success with an equity-minded lens and the support to help make positive changes to mathematical learning.

9. Progress on Prior Goals

Briefly summarize the progress your unit has made in meeting the goals and objectives identified in your last Four-Year Action Plan.

- **1 - Goal - Engage students in meaningful learning.**

  To incorporate practices and educational structures and facilities that will provide students with the opportunity to be engaged and participate fully in meaningful and purposeful learning experiences.

Priority Rank: 1

Objectives:

- **1.1 - Objective - Increase the number of students served by full-time faculty members as measured by an increase to the full-time to part-time faculty ratio.**

  Priority Rank: 1

  Original Start Date: 10/15/2012 **Original End Date:** 07/01/2021

  Revised Start Date: 10/15/2012 **Revised End Date:** 08/01/2022

  Responsible Person: All full-time faculty

  Strategic Direction: 1. Promote Student Success

  Impact Type: Only Students

  Institutional Learning Outcome: -- Pick One --

  Resource Requests:

  - **1.1.r1 - Hiring faculty.**
    Description

    Hire at least two full time math faculty.

    Rationale

    The full-time to part-time for mathematics is very low which is not in best interest of the students.

    Resource Type: Ongoing

    Expenditure Category: Contract Classroom Inst. (1100)

    Funded: No

    Funding Source:

    First Year Cost/Savings: $160,000.00/$0.00

    Second Year Cost/Savings: $160,000.00/$0.00

    Third Year Cost/Savings: $160,000.00/$0.00

  Actions/Activities:

  - **1.1.a1 - Hire additional full-time faculty.**

    To provide our students with the best possible resources to succeed in their mathematics curriculum, there is a need to have a more robust full-time faculty ratio. Our part-time faculty are hard working individuals but are usually working at several different colleges, hence they cannot devote a lot of time to our campus' needs. We need more full-time faculty that can devote their time to this campus and our students.

    Start Date: 10/15/2012 **End Date:** 07/01/2021

    Responsible Person: Department Chair and Dean

    Status Code: Work is Planned but not yet firmly scheduled

    Progress Description:

The department awaits update from adminstration regarding the elimination of the hiring freeze. We can continue to collect data regarding full-time/part-time ratios.

this action was deleted

Measurements/Documentation of Progress:

0% complete.

- **1.2 - Objective - To provide excellence in teaching focusing on the classroom setting.**

To provide excellence in teaching by implementing a variety of best practices in the teaching of mathematics in order to reach all student learning styles.

Priority Rank: 4
Original Start Date: 10/15/2012 **Original End Date:** 12/15/2021
Revised Start Date: 10/15/2012 **Revised End Date:** 12/15/2021
Responsible Person: Mathematics Faculty
Strategic Direction: 1. Promote Student Success
Impact Type: Department
Institutional Learning Outcome: -- Pick One --
Resource Requests:

- **1.2.r1 - Support conference attendance of mathematics faculty.**
  Description
  Rationale

  To improve mathematics instruction and increase student success.

  Resource Type: Ongoing
  Expenditure Category: Conference and Travel (5200)
  Funded: No
  Funding Source:
  First Year Cost/Savings: $5,000.00/$0.00
  Second Year Cost/Savings: $5,000.00/$0.00
  Third Year Cost/Savings: $5,000.00/$0.00

Actions/Activities:

- **1.2.a1 - Identify and research best practices.**

  Obtain and share amongst the full-time and part-time faculty information on best practices on an ongoing and regular basis.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Mathematics Faculty
  Status Code: Work is Underway

Progress Description:

This action has been supported through our own research office and the learning opportunities provided by the California Accelleration Project, Guided Pathways, and AVID. These best practices are in constant fluctuation as instruction can always be improved. We expect to have work remain underway indefinitely.

Measurements/Documentation of Progress:

The following quote is from the report ACCESS TO TRANSFER-LEVEL MATH AND ENGLISH: FALL 2018 - SPRING 2020

"The findings show that the college has increased its transfer-level course section offerings in English by at least 30% since Fall 2018, and by over 60% in math since Fall 2017. Those increases have been coupled by corresponding decreases in the number of non-transfer-level offerings in both disciplines. Similarly, the number of student enrollments in transfer-level English course sections has increased by 36% since Fall 2018. Finally, a greater number of students are now completing transfer-level coursework; in fact, 31% more students completed transfer-level English in Fall 2019 than did in Fall 2018, and 82% more students completed transfer-level math in Fall 2019 than did in Fall 2017. Thus, while the overall success rates have not increased over that period, the volume of students now fulfilling a critical requirement in their educational journeys has increased significantly."

Read the Full Report

- **1.2.a2 - Devote parts of department meetings to share new teaching strategies.**

  Ongoing departmental discussions.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Mathematics Faculty
  Status Code: Work is Completed and Ongoing
  Progress Description:

  The math department meetings have a standing agenda item for updates from Community of Practice (CoP). These updates both provide an opportunity for the department to hear of new methods and an opportunity for the department to supply alternative instruction methods. However, the main bulk of this work is carried out by our AB-705 lead in our CoP monthly meetings.

  Measurements/Documentation of Progress:

In an effort to increase engagement the math department has created its own website for faculty to be able to view minutes, agendas, and math department resources.

- **1.2.a3 - Promote conference attendance.**

  We want to have the ability to attend conferences that relate to the teaching of mathematics to improve student success.

  Start Date: 10/29/2012 **End Date:** 12/29/2021
  Responsible Person: Mathematics Faculty
  Status Code: Work is Completed and Ongoing
  Progress Description:

  The math department has worked with the office of instruction and professional development to increase attendance to conferences such as CMC3, AVID, AMATYC, and CAP.

  Measurements/Documentation of Progress:

  All of our full-time faculty members have had an opportunity to attend a training offered by CMC3, AVID, AMATYC, and CAP with in the last 4 years.

- **1.3 - Objective - To provide balanced schedule offerings for all courses.**

  To provide all students with a wide variety of course offerings and times; evenly distributed throughout the morning, afternoon and evening. If the department is to have a balanced schedule of offerings and be able to increase the number of sections offered then the department must have dedicated classrooms appropriate to mathematics instruction.

  Priority Rank: 5
  Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
  Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
  Responsible Person: Mathematics Faculty and Dean
  Strategic Direction: 4. Expand Access
  Impact Type: Only Students
  Institutional Learning Outcome: -- Pick One --
  Resource Requests:

  - **1.3.r1 - Increase the number of course offerings.**
    Description

    Increase the number of section offerings: 6 per year.

    Rationale

Math is the gate keeper for most degrees on campus and is a prerequisite or departmental recommandation for many programs and courses at Crafton Hills College.

Resource Type: Ongoing
Expenditure Category: Instructors Day/Hourly (1300)
Funded: No
Funding Source:
First Year Cost/Savings: $37,730.00/$0.00
Second Year Cost/Savings: $37,730.00/$0.00
Third Year Cost/Savings: $37,730.00/$0.00

Actions/Activities:

- **1.3.a1 - To increase the number of course offerings.**

  Campus needs to grow and the math department can help attain that goal.

  Start Date: 10/15/2012 **End Date:** 12/15/2021
  Responsible Person: Department Chair and Dean
  Status Code: Work is Completed
  Progress Description:

  The department has found that increases are not always the correct solution to properly serve our students. At times modality, days/times, or the number of offerings are needed to best serve students. This is why this activity has been clarified as: Evaluate course offering patterns.

  Measurements/Documentation of Progress:

  The chair(s) shall research trends with assistance from the OIERP to ensure a balanced schedule. This work has been ongoing since 2012. The nature of the work requires the chair(s) to continuously evaluate enrollment trends. This work is done with the Dean of LAM, the VPI, math department meetings, and chairs meetings. The chair(s) for the math department is looking forward to the college expanding the use of software, such as Coursedog, to simplify the evaluation of offering patterns process.

- **1.3.a2 - To obtain priority scheduling in additional rooms.**

  To obtain priority scheduling in additional rooms in order to increase the number of sections offered.

  Start Date: 11/15/2014 **End Date:** 08/15/2025
  Responsible Person: Dept. Chair and Dean

Status Code: Work is Scheduled to begin on a resonably firm date
Progress Description:

With funds from Measure CC we expect a new, central instructional building which should assist us with growing our availability of priority scheduling in rooms.

Measurements/Documentation of Progress:

The number of rooms for which the department of mathematics has priority remains the same.

- **1.4 - Objective - To improve the quality of the learning environment for teaching mathematics with appropriately designed classrooms.**

To obtain classrooms, furniture and technology that are appropriate for best practices in the teaching mathematics .

Priority Rank: 2
Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
Responsible Person: Mathematics Faculty and Dean
Strategic Direction: 1. Promote Student Success
Impact Type: Only Students
Institutional Learning Outcome: -- Pick One --
Actions/Activities:

- **1.4.a1 - Obtain wireless capable projectors.**

Install a permanent mounted wireless data projector in all classrooms used by the mathematics department. NORTH 101, 102 , CHL 202 and CNTL have been done.

Start Date: 11/15/2010 **End Date:** 03/15/2021
Responsible Person: Department Chair and Dean
Status Code: Work is Completed
Progress Description:

This has been updated to a resource request.

Measurements/Documentation of Progress:

This has been updated to a resource request.

- **1.4.a2 - Improve furniture for technology in additional classrooms.**

To obtain computer lab furniture that supports computers with fold down monitors so that computers can be stored while not in use.

Start Date: 10/15/2010 **End Date:** 05/31/2021
Responsible Person: Department Chair and Dean
Status Code: Work is Completed
Progress Description:

This has been updated to a resource request.

Measurements/Documentation of Progress:

This has been updated to a resource request.

- **1.4.a3 - To have sufficient custodial support.**

  Due to shortage of custodial staff, classroom maintainance has been compromised and inappropriately maintained to ensure a proper learning environment. With additional custodial support this could be alleviated.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Director, facilities and operations
  Status Code: Work is Completed
  Progress Description:

  This has been updated to a resource request.

  Measurements/Documentation of Progress:

  This has been updated to a resource request.

- **1.4.a4 - Obtain Document Projectors.**

  Obtain document projectors for all classrooms used by the mathematics department.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: All mathematics faculty.
  Status Code: Work is Completed
  Progress Description:

  This has been updated to a resource request.

  Measurements/Documentation of Progress:

This has been updated to a resource request.

- **1.4.a5 - Reorienting NRTH 101 and 102.**

  To reorient the NRTH classrooms.

  Start Date: 10/15/2012 **End Date:** 05/31/2021
  Responsible Person: Department Chair and Dean
  Status Code: Work is Completed
  Progress Description:

  Work has begun on this request. However, this has been updated to a resource request.

  Measurements/Documentation of Progress:

  This has been updated to a resource request.

- **1.5 - Objective - To increase the success of mathematics students through virtualization using PC/Tablets, iPads, or notebooks in classrooms.**

  To provide support to mathematics students through virtualization using PC/Tablets or Pads in classrooms or have more dedicated rooms with hardwired/stationary computers.

  Priority Rank: 7
  Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
  Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
  Responsible Person: Department Chair and Dean
  Strategic Direction: 1. Promote Student Success
  Impact Type: Only Students
  Institutional Learning Outcome: -- Pick One --
  Resource Requests:

  - **1.5.r1 - Obtain PC Tablets for faculty.**
    Description

    Obtain high quality tablets or notebooks for faculty use in classrooms such as Surface Pro or Surface Notebook.

    Rationale

    To improve active learning in the classroom and to capture lecture notes for posting on a web based site such as Blackboard.

    Resource Type: Ongoing
    Expenditure Category: Instructional Supplies (4300)
    Funded: No

Funding Source:

First Year Cost/Savings: $15,000.00/$0.00

Actions/Activities:

- **1.5.a1 - Meet with IT department.**

  Meeting with IT to determine feasability.

  Start Date: 03/16/2012 **End Date:** 05/31/2021
  Responsible Person: All mathematics faculty
  Status Code: Work is Planned but not yet firmly scheduled
  Progress Description:

  The department continues to work with IT to discuss updates to classroom technology.

  Measurements/Documentation of Progress:

  Some changes to classrooms include new wireless projectors, removable wireless dongles, and portable document cameras.

- **1.5.a2 - Obtain PC tablets.**

  To capture lecture notes and virtual office hours, which can be made available to mathematics students.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Department Chair and Dean
  Status Code: Objective was Removed
  Progress Description:

  This has been updated to a resource request.

  Measurements/Documentation of Progress:

  This has been updated to a resource request.

- **1.5.a3 - Obtain wireless capability for permanently mounted projectors.**
  Start Date: 03/16/2012 **End Date:** 11/15/2021
  Responsible Person: Dean and Mathematics Faculty
  Status Code: Objective was Removed
  Progress Description:

  This has been updated to a resource request.

  Measurements/Documentation of Progress:

This has been updated to a resource request.

- **1.5.a4 - Mathematics Software.**

  The math students need access to appropriate software to address diverse learning styles and teaching modalities. Software such as: Green Globs, Geogebra, Geometers sketchpad. For the higher courses such as Math 255, software such as Matlab, Derive, or Mathematica.

  Start Date: 12/01/2016 **End Date:** 12/01/2021
  Responsible Person: All Mathematics Faculty
  Status Code: Objective was Removed
  Progress Description:

  This is underway. However, this has been updated to a resource request.

  Measurements/Documentation of Progress:

  This has been updated to a resource request.

- **1.6 - Objective - To increase math student success by working in collaboration with the tutoring center.**
  Priority Rank: 9
  Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
  Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
  Responsible Person: Department Chair
  Strategic Direction: 1. Promote Student Success
  Impact Type: Only Students
  Institutional Learning Outcome: -- Pick One --
  Actions/Activities:

  - **1.6.a1 - Advocate for hiring mathematics tutors.**

    There is a need for peer tutors to help with the support labs that we currently have for some of our classes. As the Math Department hopes to move toward, having more lab supported classes it is essential to staff the computer labs with tutors that are trained to use the software and help the instructors.

    Start Date: 10/15/2012 **End Date:** 11/15/2021
    Responsible Person: Tutoring Center Coordinator
    Status Code: Work is Underway
    Progress Description:

    The math department, office of instruction, and tutoring center are working in tandem to ensure that there is an appropriate amount of tutors available.

Measurements/Documentation of Progress:

All instructors in co-reqs and 100 level classes have the opportunity to add an embedded tutor to their section. All students have tutoring availability when needed during normal operating hours.

- **1.6.a2 - Encourage math faculty to recommend good students to apply to be tutors.**
  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Mathematics Faculty
  Status Code: Work is Completed and Ongoing
  Progress Description:

  This work is a part of our math department, Community of Practice meetings, and informal onboarding process for new faculty.

  Measurements/Documentation of Progress:

  All math faculty are aware of the need for qualified instructors.

- **1.6.a3 - Encourage faculty to send more students to the tutoring center.**

  In order to help students to be more successful, the faculty need to encourage students to make better use of the tutoring center.

  Start Date: 10/15/2012 **End Date:** 12/15/2021
  Responsible Person: Mathematics Faculty
  Status Code: Work is Completed and Ongoing
  Progress Description:

  This work is a part of our math department, Community of Practice meetings, and informal onboarding process for new faculty.

  Measurements/Documentation of Progress:

  Students are aware of tutoring services.

- **1.6.a4 - Increase faculty involvement with the Math component of the Tutoring Center**

  Encourage full-time faculty to hold office hours in the tutoring center and encourage part-time faculty to use their professional development for student contact in the tutoring center. This could include faculty involvement in offering diverse workshops through the tutoring center.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Department Chair and Dean

Status Code: Work is Completed and Ongoing
Progress Description:

This work is a part of our math department, Community of Practice meetings, and informal onboarding process for new faculty.

Measurements/Documentation of Progress:

Faculty are aware that the can hold office hours in the tutoring and STEM centers.

- **1.6.a5 - Obtain tutors for Saturday tutoring.**

  Explore ways to involve the tutoring center to provide staffing for Saturday tutoring.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Tutoring Center Mathematics Coordinator
  Status Code: Work is Planned but not yet firmly scheduled
  Progress Description:

  The changes due to the pandemic may make this action obsolete. The department is still waiting to see what changes will remain in effect after we return to in-person instruction.

  Measurements/Documentation of Progress:

  Tutoring is avaible on weekends.

- **1.7 - Objective - Expand the current math program and course offerings to better meet student needs and demand.**
  Priority Rank: 6
  Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
  Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
  Responsible Person: All Full-Time Mathematics Faculty
  Strategic Direction: 1. Promote Student Success
  Impact Type: Only Students
  Institutional Learning Outcome: -- Pick One --
  Resource Requests:

  - **1.7.r1 - Multiple Measures**
    Description
    Rationale

    Travel, stipends, reassigned time or something of this nature so as to explore multiple measures at other colleges.

    Resource Type: Ongoing

Expenditure Category: Reassigned Time (1102)
Funded: No
Funding Source:
First Year Cost/Savings: $7,000.00/$0.00
Second Year Cost/Savings: $3,000.00/$0.00

- **1.7.r2 - Participate in mathematics faculty retreat**
  Description

  The math department including full-time and part-time faculty need dedicated time to analyze the current curriculum from start to finish and make changes as needed, including alternative paths to GE transfer courses.

  Rationale

  Increase student success. There could be long term savings involved as students move throughout the math sequence more efficiently.

  Resource Type: One-time
  Expenditure Category: Substitutes Day/Hourly (1301)
  Funded: No
  Funding Source:
  First Year Cost/Savings: $4,500.00/$0.00

Actions/Activities:

- **1.7.a1 - Multiple Measures**

  With the new multiple measures placement models many students will need additional support for the gaps in their knowledge of mathematics. The department should explore models at other colleges to determine what is the best pathway to increase students success.

  Start Date: 12/01/2016 **End Date:** 12/01/2021
  Responsible Person: Mathematics Department
  Status Code: Work is Completed and Ongoing
  Progress Description:

  This work is a part of our math department and Community of Practice meetings.

  Feb 2019: The STEM question was not being asked so that students are sorted into classes correctly. Statistics will be useful for STEM so changing majors is not a problem. The "Highest Completed Math" will change to "Select all courses completed". Department needs to review list to make sure that no classes are missing. There may be some "and" clauses became "or". The program needs to be double checked.

May 2019: Department met with VPI to discuss the creation of sheets for students for recieve based on their placement. They also discussed adding the information with the website. A request will be sent to Kristi Simonson and include deans.

Measurements/Documentation of Progress:

Students are placed appropriatley.

- **1.7.a2 - Participate in mathematics faculty retreat**

  Hold retreats to work on modifications due to multiple measures, SLO cycle, and new math pathway.

  Continue to work on common assessment and eligibility rules for courses.

  Start Date: 10/15/2012 **End Date:** 12/01/2021
  Responsible Person: Mathematics Faculty
  Status Code: Work is Planned but not yet firmly scheduled
  Progress Description:

  To better meet the needs of the department this action has been updated to a plenary. Plenary work is typically a part of our in-service day. However, with changes due to AB-705 and Guided Pathways the department has found that we lack sufficient time on our scheduled in-services day. The current pandemic has put this on hold.

  Measurements/Documentation of Progress:

  Updates to AB-705 and Guided Pathways and reviewing demographic and SLO data would be successful measurements of this activity. Currently, this work is done throughout the year at our math department meetings. The intention of this activity is to set a clear direction for the year's goals that can be supported in the regular meetings.

- **2 - Goal - Continue to engage in evidence-based decision making.**

  To obtain current data and analyze it so that we can better serve our students. Our main goal is to analyze retention and success data. However, we need also to obtain/analyze data on the viability of our fast track classes.

  Priority Rank: 3
  Objectives:

- **2.1 - Objective - To improve student success in mathematics courses by participating in multiple measures and the acceleration project.**

  Continue to meet with the research department with respect to multiple measures eligibility rules and alternative accelerated pathways.

  Priority Rank: 3
  Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
  Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
  Responsible Person: Mathematics Faculty and OIERP
  Strategic Direction: 1. Promote Student Success
  Impact Type: Only Students
  Institutional Learning Outcome: -- Pick One --
  Status Code: Work is Completed and Ongoing
  Progress Description:

  This work is ongoing. The math department regular evaluates data on student placement to reevaluate the multiple measures placement flowchart as part of the acceleration project. We also review SLO data and interview instructors of co-requriest classes to ensure that practices implemented in the classroom are supporting student success.

- **2.2 - Objective - Increase student success by gathering information on, and implementing best practices for, the teaching of mathematics.**

  Collect data on effectiveness on Best Practices.

  Priority Rank: 8
  Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
  Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
  Responsible Person: All Full-Time Mathematics Faculty
  Strategic Direction: 1. Promote Student Success
  Impact Type: Only Students
  Institutional Learning Outcome: -- Pick One --
  Actions/Activities:

  - **2.2.a1 - Research math class impact on student self efficacy.**

    Obtain data on how CHC math classes impact students' self efficacy.

    Start Date: 10/15/2012 **End Date:** 11/15/2021
    Responsible Person: Mathematics Faculty
    Status Code: Work is Planned but not yet firmly scheduled
    Progress Description:

    The department has work to clarify the type of data required to measure student self-efficacy. The action has been updated to provide

clarity on action the department will take.

Measurements/Documentation of Progress:

The department has evaluated and rewritten our PLOs and SLOs to better enable the collection of data related to student self-efficacy.

- **2.3 - Objective - Obtain data on how Crafton Hills College mathematics classes impact students' self efficacy.**

Obtain data on how CHC math classes affect the students self confidence in math; self efficacy, motivation and persistence.

Priority Rank: 11
Original Start Date: 10/15/2012 **Original End Date:** 12/15/2021
Revised Start Date: 10/15/2012 **Revised End Date:** 12/15/2021
Responsible Person: All mathematics faculty
Strategic Direction: 1. Promote Student Success
Impact Type: Only Students
Institutional Learning Outcome: -- Pick One --
Actions/Activities:

- **2.3.a1 - Analyze Data**

Ongoing activity. Data will have to be analyzed to address department SLO's

Start Date: 10/15/2012 **End Date:** 11/15/2021
Responsible Person: Mathematics Faculty and OIERP
Status Code: Work is Underway
Progress Description:

This is an ongoing activity on the part of the department.

Measurements/Documentation of Progress:

The department evaluates SLO data on flex days, in-service days, and at regularly scheduled department meetings.

- **2.4 - Objective - Increase student success by investigating the factors influencing student persistence through the math sequence.**

Priority Rank: 10
Original Start Date: 10/15/2012 **Original End Date:** 11/15/2021
Revised Start Date: 10/15/2012 **Revised End Date:** 11/15/2021
Responsible Person: Mathematics Faculty and OIERP
Strategic Direction: 1. Promote Student Success
Impact Type: Only Students

Institutional Learning Outcome: -- Pick One --
Actions/Activities:

- **2.4.a1 - Data mining.**

  The department would like data on student success based on their grade in the previous math course. Modifications to grading procedures will be discussed.

  Start Date: 10/15/2015 **End Date:** 11/15/2021
  Responsible Person: Mathematics Faculty and OIERP
  Status Code: Work is Completed and Ongoing
  Progress Description:

  The department consistantly reviews data to make changes to course offerings and methods of instruciton.

  Measurements/Documentation of Progress:

  Classes have been adjusted for units (Math 995, 255, 910, and 902), some classes are being phased out (Math 085), some co-reqs have been added (math 915 and 903), some co-reqs are still in discussion (co-reqs for math 250 and 251).

- **2.4.a2 - Explore intervention to increase persistence in the mathematics sequence.**

  Modify and implement survey on why students do not have persistence to the next level of mathematics. The results of this survey will then be used for training workshops with all math faculty to help find ways to increase student persistence.

  Start Date: 10/15/2012 **End Date:** 11/15/2021
  Responsible Person: Mathematics Faculty and OIERP
  Status Code: Work is Completed and Ongoing
  Progress Description:

  This work is a part of our math department, Community of Practice meetings, and informal onboarding process for new faculty.

  Measurements/Documentation of Progress:

  Classes have been adjusted for units (Math 995, 255, 910, and 902), some classes are being phased out (Math 085), some co-reqs have been added (math 915 and 903), some co-reqs are still in discussion (co-reqs for math 250 and 251).

10. Four-Year Action Plan (Goals, Objectives, Resources, and Actions)

Rubric Item: Reflect on your responses to all the previous questions. Complete the Four-Year Action Plan, entering the specific program goals (goal rubric) and objectives (objective rubric) you have formulated to maintain or enhance your strengths, or to address identified weaknesses. **In writing your objectives and developing your resource requests, take into account student learning and program assessment results**. Assign an overall priority to each goal and each objective. In addition, enter any actions and/or resources required to achieve each objective. (Click here to see a definition of goals, objectives, actions, and how they work together.)

- **1 - Goal - Engage students in meaningful learning.**

  To incorporate practices and educational structures and facilities that will provide students with the opportunity to be engaged and participate fully in meaningful and purposeful learning experiences.

  Priority Rank: 1
  Objectives:

  - **1.1 - Objective - Increase the number of students served by full-time faculty members as measured by an increase to the full-time to part-time faculty ratio.**
    Priority Rank: 1
    Start Date: 10/15/2020 **End Date:** 06/30/2024
    Responsible Person: All full-time faculty
    Strategic Direction: 1. Promote Student Success
    Impact Type: Only Students
    Institutional Learning Outcome: Not Applicable
    Resource Requests:

    - **1.1.r1 - Add full-time faculty**
      Description

      Hire a minimum of two additional full-time math faculty.

      Rationale

      The department's full-time to part-time ratio is about 35/65 which is not in the best interest of the students. To provide our students with the best possible resources to succeed in their mathematics curriculum, there is a need to have a more robust full-time faculty ratio to support the instruction of best practices, curriculum, PPR, and the myriad of college and district committees that are needed to support our students. Our part-time faculty are hard-working individuals and by necessity of their part-time status are employed at several different colleges; they cannot, nor should they be asked to, volunteer their time to our campus' needs. We need more full-time faculty that can devote their time to this campus and our students.

From the paper Why Full-Time Faculty Matter Published by ASCCC:

Although part-time faculty offer the same quality in teaching, the benefits of a sufficient complement of full-time faculty members are numerous, from providing essential stability for planning and curriculum functions to providing the levels of availability that students need outside of the classroom. In their book The American Community College, authors Arthur Cohen and Florence Brawer identified a number of functions which are normally performed either entirely or in greater measure by full-time faculty than by part-time faculty:

- Instructional Activities
  - Curriculum Management Activities
  - Periodic Syllabus Revision
  - Joint teaching with Colleagues
  - Interdisciplinary Participation
  - Involvement in Honors Courses
- General Education Involvement
  - Organization of Extracurricular Activities for Students
  - Professional Activities
  - Participation in Educational Associations
  - Disciplinary Associations
  - Community College Associations
  - Service as Department Chair
  - Institutional committee service

Resource Type: Ongoing

Expenditure Category: Contract Classroom Inst. (1100)

First Year Cost/Savings: $240,000.00/$0.00

Second Year Cost/Savings: $240,000.00/$0.00

Third Year Cost/Savings: $240,000.00/$0.00

- **1.2 - Objective - To provide excellence in teaching focusing on the classroom setting.**

Priority Rank: 3

Start Date: 10/01/2020 **End Date:** 06/30/2024

Responsible Person: Mathematics Faculty

Strategic Direction: 1. Promote Student Success

Impact Type: Department

Institutional Learning Outcome: Not Applicable

Resource Requests:

- **1.2.r1 - Support conference attendance of mathematics faculty.**

Description

The Mathematics Department would like continued support to attend the following conferences and other conferences that may come up.

- AVID
- CAP
- CMC3
- AMATYC

Rationale

Need best practices from attending the above conference to help support the mathematics department's PLO's:

1. Develop a positive attitude or improve their attitude toward mathematics.
2. Recognize, define, and use formal mathematic notation as appropriate to the course outline.
3. Successfully perform mathematical calculations and applications required for the subsequent course in mathematics.
4. Apply mathematical reasoning to a variety of real-life situations.

The conferences will also improve mathematics instruction and increase student success.

We are estimating conferences at $800 per conference at 3 conferences per full-time faculty members.

Resource Type: Ongoing

Expenditure Category: Conference and Travel (5200)

First Year Cost/Savings: $16,800.00/$0.00

Second Year Cost/Savings: $16,800.00/$0.00

Third Year Cost/Savings: $16,800.00/$0.00

- **1.2.r2 - Continue funding and supporting AB 705 training and reflection.**
  Description

  The mathematics department would like continued funding for the AB-705 lead and other professional developement opportunities.

  Rationale

  Funding for AB-705 lead faculty to coordinate community of practice (CoP) trainings and other professional development opportunities. The lead needs time to evaluate research on student success and best practices. The lead should report regularly to the department, meet regularly with all instructors teaching a 900 level class, and meet

regularly with the tutoring center faculty and staff to support and train the embedded tutor program. (Request is for backfill for approximately 0.3 release.)

Resource Type: Ongoing
Expenditure Category: Reassigned Time - Non Classroom (1486)
First Year Cost/Savings: $10,000.00/$0.00
Second Year Cost/Savings: $10,000.00/$0.00
Third Year Cost/Savings: $10,000.00/$0.00

- **1.2.r3 - Support Community of Practice attendance for part-time mathematics faculty.**
  Description

  Non-instructional hourly rate paid to any part-time faculty member attending the CoP meetings. Non-instructional hourly rate paid to any faculty member attending the CoP meetings outside of contracted workdays (e.g. Summer break/Weekends).

  Rationale

  Our part-time faculty are hard-working individuals and by the necessity of their part-time status are employed at several different colleges; they cannot, nor should they be asked to, volunteer their time to our campus' needs.
  Funding for Community of Practice attendance for part-time mathematics faculty gives them the ability to attend so that they can incorporate the research on student success and best practices in the classroom.

  Resource Type: Ongoing
  Expenditure Category: Instructors Day/Hourly (1300)
  First Year Cost/Savings: $10,000.00/$0.00
  Second Year Cost/Savings: $10,000.00/$0.00
  Third Year Cost/Savings: $10,000.00/$0.00

Actions/Activities:

- **1.2.a1 - Identify and research best practices.**

  Obtain from research, data, and conferences and workshops information on best practices and share amongst the full-time and part-time faculty on an ongoing and regular basis. This ongoing work has been a focus of the math department since 2012. We have expanded an ongoing and regular basis to include Community of Practice meetings in addition to department meetings.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Mathematics Faculty

- **1.2.a2 - Devote parts of department meetings to share new teaching strategies.**

  This ongoing work has been an emphasis for the math department since 2012. We have expanded to include Community of Practice meetings in addition to department meetings.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Mathematics Faculty

- **1.2.a3 - Promote conference attendance.**

  This ongoing work has been an emphasis for the math department since 2012. We have expanded to include Community of Practice meetings in addition to department meetings. We use emails, Facebook, department meetings, conversations, and community of practice meetings to promote conference opportunities.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Mathematics Faculty

- **1.2.a4 - Promote Community of Practice Meetings**

  To support the implementation of best practices the math department will work to promote involvement in the Community of Practice meetings through communications from both the AB-705 Lead and the Department Chair(s).

  Start Date: 10/01/2020 **End Date:** 06/30/2024

- **1.3 - Objective - To provide balanced schedule offerings for all courses.**

  To provide all students with a wide variety of course offerings and times; evenly distributed throughout the morning, afternoon and evening. If the department is to have a balanced schedule of offerings and be able to increase the number of sections offered then the department must have dedicated classrooms appropriate to mathematics instruction.

  Priority Rank: 8
  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Mathematics Faculty and Dean
  Strategic Direction: 4. Expand Access
  Impact Type: Only Students
  Institutional Learning Outcome: Not Applicable
  Resource Requests:

  - **1.3.r1 - Balance course offerings needed for degree/certificate/transfer attainment**
    Description

Balance the number of course sections to meet student demand. This may mean that we need to offer lower enrolled classes that are needed for student completion. These classes may either be low demand or offered in nights or weekends to enable equitable attendance.

Rationale

In order to balance the number of course sections to meet student demand for degree/certificate/transfer attainment, funding is needed to allow for low enrolled classes.

Resource Type: Ongoing
Expenditure Category: Instructors Day/Hourly (1300)
First Year Cost/Savings: $37,730.00/$0.00
Second Year Cost/Savings: $37,730.00/$0.00
Third Year Cost/Savings: $37,730.00/$0.00

- **1.3.r2 - Obtain additional classroom space**
  Description

  Continue to advocate to increase priority availability for math classrooms.

  Rationale

  In order to support a balanced schedule based on student need, the math department needs to increase classroom space during peak times. Existing space is inadequate for current course offerings; thus, the department would prefer to have a dedicated math building. However, it could settle for just part of a shared building.

  Resource Type: One-time
  Expenditure Category: New Buildings (6210)
  First Year Cost/Savings: $1,000,000.00/$0.00
  Second Year Cost/Savings: $90,000.00/$0.00
  Third Year Cost/Savings: $90,000.00/$0.00

Actions/Activities:

- **1.3.a1 - Evaluate course offering patterns**

  The chair(s) shall research trends with assistance from the OIERP to ensure a balanced schedule. This work has been ongoing since 2012. The nature of the work requires the chair(s) to continuously evaluate enrollment trends. This work is done with the Dean of LAM, the VPI, math department meetings, and chairs meetings. The chair(s) for the math department is looking forward to the college expanding the use of software, such as Coursedog, to simplify the evaluation of offering patterns process.

Start Date: 10/15/2020 **End Date:** 06/30/2024

Responsible Person: Department Chair and Dean

- **1.3.a2 - Obtain priority scheduling in additional rooms.**

  This work has been ongoing since 2014. The nature of the work requires the chair(s) to continuously evaluate enrollment trends. This work is done with the Dean of LAM, the VPI, math department meetings, and chairs meetings. The chair(s) will continue to lobby for priority scheduling in additional rooms in order to increase the number of sections offered. The department plans to continue advocating for a dedicated math building.

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Dept. Chair and Dean

- **1.4 - Objective - To improve the quality of the learning environment for teaching mathematics with appropriately designed classrooms.**

  To obtain classrooms, furniture and technology that are appropriate for best practices in the teaching mathematics .

  Priority Rank: 2

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Mathematics Faculty and Dean

  Strategic Direction: 1. Promote Student Success

  Impact Type: Only Students

  Institutional Learning Outcome: Not Applicable

  Resource Requests:

  - **1.4.r1 - Install and maintain wireless projectors for math classrooms.**
    Description

    Install and maintain a wireless projector in all classrooms used by the mathematics department. NORTH 101, 102 , and some CNTLclassrooms have projectors installed but are in need of regular maintenance.

    Rationale

    As part of the integration of technology and teaching best practices, part of which is allowing the instructor to roam the room and students to engage in groups throughout the room, and to reduce waste and cost associated with whiteboard markers, the math department is requesting wireless projectors in addition to the instructor computer in the classroom. We are estimating a cost of $500 per projector plus maintenance.

    Classrooms for which Math Department Priority According to the 2019 Chairs Handbook:

- ARTS 120
  - Capacity: 40
- ARTS 127
  - Capacity: 40
- CNTL 136
  - Capacity: 32
- CNTL 237
  - Capacity: 39
- CNTL 238
  - Capacity: 39
- CNTL 247
  - Capacity: 40
- NRTH 101
  - Capacity: 40
- NRTH 102
  - Capacity:40
- CHC 202
  - Now a temporary English classroom

Resource Type: Ongoing

Expenditure Category: Equipment & Furniture (6400)

First Year Cost/Savings: $5,000.00/$0.00

Second Year Cost/Savings: $2,000.00/$0.00

Third Year Cost/Savings: $2,000.00/$0.00

- **1.4.r2 - Add furniture with in-desk computer storage for student stations.**
  Description

  Obtain computer lab furniture that supports in-desk computer storage to allow better class flow for group work while computers are not in use.

  Rationale

  As part of AB-705, math classes need to support group interaction and discussion. As part of STEM, math classes need to support technology-based learning. These desks will assist in creating a balance between these two requirements. Our cost is our best guess.

  Resource Type: One-time

  Expenditure Category: Equipment & Furniture (6400)

  First Year Cost/Savings: $10,000.00/$0.00

- **1.4.r3 - Add custodial support.**
  Description

Rationale

Due to a shortage of custodial staff, classroom maintenance has been compromised and not maintained sufficiently to ensure a proper learning environment. With additional custodial support, this could be alleviated.

Resource Type: Ongoing

Expenditure Category:

Classified Unit Member Non-Instruction (2181)

First Year Cost/Savings: $100,000.00/$0.00

Second Year Cost/Savings: $100,000.00/$0.00

Third Year Cost/Savings: $100,000.00/$0.00

- **1.4.r4 - Add document projectors for all classrooms and adjust the location of existing document projectors.**
  Description

  Obtain document projectors for all classrooms used by the mathematics department. Adjust the current and incoming document projectors for accessibility.

  Rationale

  Document projectors are used as part of best practices. They allow students to share work and instructors to use as many methods as possible to share ideas. We also request that the installation of the current document projectors and incoming document projectors be assessed for accessibility. Some are currently anchored too tightly to allow adjusted for a comfortable writing angle. Others are anchored directly ontop furniture, rather than open spaces at seated desks, so it is impossible to sit in front of the projector.

  We are estimating a cost of $500 per projector plus maintenance.

  Classrooms for which Math Department Priority According to the 2019 Chairs Handbook:

  - ARTS 120
    - Capacity: 40
  - ARTS 127
    - Capacity: 40
  - CNTL 136
    - Capacity: 32
  - CNTL 237
    - Capacity: 39
  - CNTL 238

        - Capacity: 39
    - CNTL 247
        - Capacity: 40
    - NRTH 101
        - Capacity: 40
    - NRTH 102
        - Capacity:40
    - CHC 202
        - Now a temporary English classroom

  Resource Type: One-time

  Expenditure Category: Equipment & Furniture (6400)

  First Year Cost/Savings: $4,000.00/$0.00

- **1.4.r5 - Reverse the orientation of the NRTH classrooms.**
  Description

  Reverse the orientation of the NRTH classrooms.

  Rationale

  The NRTH 101 and 102 classroom orientation limits the instructor's mobility in the front of the room. Due to the location of the air duct and the limited space at the front of the room, nearly all instructors in NRTH lecture from the back of the room, which forces the students to use the desk behind them as a writing station.

  Resource Type: One-time

  Expenditure Category: Equipment & Furniture (6400)

  First Year Cost/Savings: $1,000.00/$0.00

- **1.5 - Objective - To increase the success of mathematics students through virtualization using PC/Tablets, iPads, or notebooks in classrooms.**

  To provide support to mathematics students through virtualization using PC/Tablets or iPads in classrooms or have more dedicated rooms with hardwired/stationary computers.

  Priority Rank: 7

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Department Chair and Dean

  Strategic Direction: 1. Promote Student Success

  Impact Type: Only Students

  Institutional Learning Outcome: Not Applicable

  Resource Requests:

  - **1.5.r1 - Obtain PC Tablets for faculty.**
    Description

Obtain high quality tablets or notebooks for faculty use in classrooms such as Surface Pro, Surface Notebook, or iPad with Pencil.

Rationale

To improve active learning in the classroom and to capture lecture notes for posting on a web-based site such as Canvas or MyMathLab. To capture lecture notes and virtual office hours, which can be made available to mathematics students.

Resource Type: Ongoing
Expenditure Category: Instructional Supplies (4300)
First Year Cost/Savings: $15,000.00/$0.00

- **1.5.r2 - Obtain mathematics software.**
  Description

  In general, software such as Green Globs, Geogebra, Geometers sketchpad. For the higher courses such as Math 255, software such as Matlab, Derive, or Mathematica.

  Rationale

  The math students need access to appropriate software to address diverse learning styles and teaching modalities. The software will need ongoing updates and maintenance.

  Additional Information from our beloved colleague Frank Madrid.

  To my mathematics faculty chair counterparts,

  The MITN Department is purchasing a classroom set of thirty plus fifteen Matlab licenses and are using the machines in the CNTL 109-A computer lab (very powerful and state-of-the-art computers) to host the installations. These licenses have the following properties:

  Perpetual - No recurring cost but we lose the ability to download newer versions (MathWorks tends to put out two versions per year, 20XXa and 20XX b)

  Concurrent - Our license will serve thirty concurrent users regardless of location. Concurrent user thirty-one will be prevented from logging in

  Classroom - License only allows academic use (classroom, research, etc.)

  There is no reason other machines on campus cannot also have an installation but I do not control the installation of software on machines outside of the MITN department. I can ask Corey (our technical lead)

for more information. It is my intention to incorporate Matlab into the CSCI/MATH 200 curriculum and I see no reason why other courses (particularly Calculus I/II, Linear Algebra, and Differential Equations) would not benefit from it as well. We would need to be careful about the number of licenses we may need to accommodate all of our students.

One final note. I did not purchase a Simulink subscription (only Matlab) since I could not think of a reason we would need it. Have either of you worked with Simulink and feel we should include it?

Any input you would like to provide would be much appreciated. If you have any more remaining Mathematics Department meetings this semester, maybe I can join in on the next one as well?

Thanks!

Resource Type: Ongoing
Expenditure Category: Software (4430)
First Year Cost/Savings: $3,000.00/$0.00
Second Year Cost/Savings: $500.00/$0.00
Third Year Cost/Savings: $500.00/$0.00

Actions/Activities:

- **1.5.a1 - Meet with IT department.**

  Meeting with IT to determine feasibility for

  - 1.5.r1 - Obtain PC Tablets for faculty.
  - 1.5.r2 - Obtain mathematics software.

  This work has been ongoing since 2012. The nature of the work requires the chair(s) to continue to meet with IT as technology and technology needs are ever-evolving.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: All mathematics faculty

- **1.6 - Objective - To increase math student success by working in collaboration with the tutoring center.**
  Priority Rank: 10
  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Department Chair
  Strategic Direction: 1. Promote Student Success
  Impact Type: Only Students
  Institutional Learning Outcome: Not Applicable
  Resource Requests:

  - **1.6.r1 - Ensure availability of embedded tutors**

Description
Rationale

Embedded tutors are part of best practices for AB-705 related to changes to instruction and placement. The department would like to ensure that all instructors that wish to use an embedded tutor have access. This requires, not just hiring more tutors, but funds for advertising tutoring jobs and supplying pay for tutor trainings for effective embedded tutoring.

Resource Type: Ongoing
Expenditure Category: Part-Time / Overtime / Student (2380)
First Year Cost/Savings: $10,000.00/$0.00
Second Year Cost/Savings: $10,000.00/$0.00
Third Year Cost/Savings: $100,000.00/$0.00

Actions/Activities:

- **1.6.a1 - Advocate for hiring mathematics tutors.**

  This work has been ongoing since 2012. As most tutors are student workers, employed for a short time, this activity requires the chair(s) to continuously advocate for additional tutors. There is a need for peer tutors to help with the support labs that we currently have for some of our classes. As the Math Department hopes to move toward, having more lab-supported classes it is essential to staff the computer labs with tutors that are trained to use the software and help the instructors.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Tutoring Center Coordinator

- **1.6.a2 - Encourage math faculty to recommend good students to apply to be tutors.**

  This work has been ongoing since 2014. Continuing research into best practices requires the method and use of tutors in the classroom to update. This can result in instructors losing focus on the positive use of the tutors in the center or in their classes. The math department works to realign focus on using student support services to the student's advantage.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Mathematics Faculty

- **1.6.a3 - Encourage faculty to send more students to the tutoring center.**

  In order to help students to be more successful, the faculty need to encourage students to make better use of the tutoring center. This work

has been ongoing since 2012. The nature of employing temporary part-time instructors requires the chair(s) to continue to make new part-time faculty aware of support services.

Start Date: 10/15/2020 **End Date:** 06/30/2024

Responsible Person: Mathematics Faculty

- **1.6.a4 - Increase faculty involvement with the Math component of the Tutoring Center**

  Encourage full-time faculty to hold office hours in the tutoring center and encourage part-time faculty to use their professional development for student contact in the tutoring center. This could include faculty involvement in offering diverse workshops through the tutoring center. This work has been ongoing since 2012. The nature of employing temporary part-time instructors requires the chair(s) to continue to make new part-time faculty aware of support services.

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Department Chair and Dean

- **1.6.a5 - Obtain tutors for Saturday tutoring.**

  Explore ways to involve the tutoring center to provide staffing for Saturday tutoring. This work has been ongoing since 2012. Fluctuating budgets have both allowed us to run Saturday tutoring and forced us to stop offering Saturday tutoring.

  Start Date: 10/15/2020 **End Date:** 06/30/2020

  Responsible Person: Tutoring Center Mathematics Coordinator

- **1.7 - Objective - Expand the current math program and course offerings to better meet student needs and demand.**

  Priority Rank: 9

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: All Full-Time Mathematics Faculty

  Strategic Direction: 1. Promote Student Success

  Impact Type: Only Students

  Institutional Learning Outcome: Not Applicable

  Resource Requests:

  - **1.7.r1 - Funding to research updates for Multiple Measures Description**

    Travel, stipends, reassigned time, or something of this nature so as to explore data and best practices relating to the implementation of multiple measures at CHC as well as community colleges statewide.

    Rationale

With the new multiple measures placement models many students have needed additional support. As an important part of PLO support, the math department needs time and resources to explore data and best practices relating to the implementation of multiple measures at CHC as well as community colleges statewide. We would like to support travel, stipends, reassigned time for at least two full-time math faculty. We are estimating $5,000 per faculty member per year. The bulk of which would be used to supply backfill for reassigned time.

Resource Type: Ongoing
Expenditure Category: Reassigned Time (1102)
First Year Cost/Savings: $10,000.00/$0.00
Second Year Cost/Savings: $10,000.00/$0.00
Third Year Cost/Savings: $10,000.00/$0.00

- **1.7.r2 - Participate in mathematics faculty plenary**
  Description

  Once a year full-day plenary before the start of Fall.

  Rationale

  To increase student success as related to the PLOs the department would work on modifications due to multiple measures, SLO cycle, new math pathway, and common assessment and eligibility rules for courses, team building, and etc. The cost would be 6 hours of non-instructional pay per full-time math faculty member plus food and drinks.

  Resource Type: One-time
  Expenditure Category: Substitutes Day/Hourly (1301)
  First Year Cost/Savings: $2,500.00/$0.00
  Second Year Cost/Savings: $2,500.00/$0.00
  Third Year Cost/Savings: $2,500.00/$0.00

Actions/Activities:

- **1.7.a1 - Continue to update Multiple Measures**

  Actively review and make updates to Multiple Measures placement based on research, best practices, and local and statewide data. This work has been ongoing since 2016. Analysis from enrollment data and student throughput and success rates requires that multiple measures continue to be updated regularly.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Mathematics Department

- **1.7.a2 - Participate in mathematics faculty plenary**

This work has been planned since 2012. It was formally the mathematics faculty retreat. However, we have only successfully held a retreat a small number of times. We hope to re-establish this as a one-day plenary to work on modifications due to multiple measures, SLO cycle, new math pathway, and common assessment and eligibility rules for courses, team building, and etc.

Start Date: 10/15/2020 **End Date:** 06/30/2024

Responsible Person: Mathematics Faculty

- **1.8 - Objective - To support the affordability of community college education by expanding our use of OER materials.**

  Priority Rank: 6

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Math Department Faculty

  Strategic Direction: 5. Enhance Value to the Surrounding Community

  Impact Type: Site

  Institutional Learning Outcome: 5. Information Literacy

  Resource Requests:

  - **1.8.r1 - Supply stipend for OER integration**

    Description

    The mathematics department is requesting a stipend for instructors who integrate OER materials in a way that can be easily implemented by additional instructors, e.g. integration into a Canvas shell that can be copied.

    Rationale

    The largest hurdle to overcome for OER integration is the ease of use for publisher content, technology, and resources. This includes smart homework, PowerPoints, accessible textbooks, test banks, etc. All of these resources would need to be researched, tested, and implemented or created, tested, and implemented. Our goal is to have our 100 level classes have a fully-functioning, easily replicated Canvas shell that uses only no-cost materials. We are hoping to encourage this work by requesting a stipend of $2500 per course. We would like this stipend to be retroactive to the beginning of 2020 for the hours of work that have already gone into this project.

    Resource Type: One-time

    Expenditure Category: Instructors Day/Hourly (1300)

    First Year Cost/Savings: $5,000.00/$0.00

    Second Year Cost/Savings: $0.00/$5,000.00

    Third Year Cost/Savings: $0.00/$5,000.00

Actions/Activities:

- **1.8.a1 - Train faculty on integrating OER materials**

  The department would need to train faculty on integrating OER materials that have been created to be implemented by additional instructors, e.g. integration into a Canvas shell that can be copied.

  After resources have been researched, tested, and implemented or created, tested, and implemented training would be coordinated to ensure the successful integration into as many sections as possible.

  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Math department faculty

- **2 - Goal - Continue to engage in evidence-based decision making.**

To obtain current data and analyze it so that we can better serve our students. Our main goal is to analyze retention and success data. However, we need also to obtain/analyze data on the viability of our fast track classes.

Priority Rank: 3
Objectives:

- **2.1 - Objective - To improve student success in mathematics courses by participating in multiple measures and the acceleration project.**

  Continue to meet with the research department with respect to multiple measures eligibility rules and alternative accelerated pathways.

  Priority Rank: 5
  Start Date: 10/15/2020 **End Date:** 06/30/2024
  Responsible Person: Mathematics Faculty and OIERP
  Strategic Direction: 1. Promote Student Success
  Impact Type: Only Students
  Institutional Learning Outcome: Not Applicable
  Actions/Activities:

  - **2.1.a1 - Facilitate college-wide discussions related to AB-705**

    The department plans to use department meetings, in-services days, Flex days, and the Community of Practice meetings to facilitate college wide-discussion on data related to AB-705.

    Start Date: 10/01/2020 **End Date:** 06/30/2024
    Responsible Person: AB-705 Lead and Department Chair(s)

- **2.2 - Objective - Increase student success by gathering information on, and implementing best practices for, the teaching of mathematics.**

  Collect data on effectiveness on Best Practices.

Priority Rank: 4

Start Date: 10/15/2020 **End Date:** 06/30/2024

Responsible Person: All Full-Time Mathematics Faculty

Strategic Direction: 1. Promote Student Success

Impact Type: Only Students

Institutional Learning Outcome: Not Applicable

Actions/Activities:

- **2.2.a1 - Research math class impact on student self-efficacy.**

  Obtain data on how CHC math classes impact students' self-efficacy; the student's ability to feel confident in their mathematical literacy. The AB-705 lead along with the department as a whole will include methods for increasing student self-efficacy in their research, workshop, and conference attendance. This work has been ongoing since 2012. The work is continuous due to constantly changing demographics and regularly updated best practices.

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Mathematics Faculty

- **2.3 - Objective - Obtain data on how Crafton Hills College mathematics classes impact students' self efficacy.**

Obtain data on how CHC math classes affect the students self confidence in math; self efficacy, motivation and persistence.

Priority Rank: 12

Start Date: 10/15/2020 **End Date:** 06/30/2024

Responsible Person: All mathematics faculty

Strategic Direction: 1. Promote Student Success

Impact Type: Only Students

Institutional Learning Outcome: Not Applicable

Actions/Activities:

- **2.3.a1 - Analyze data related to student self-efficacy.**

  The department will continue to work to analyze data in order to make plans to address student self-efficacy. The department has updated all PLOs and SLOs and to assist with the evaluation of self-efficacy. Additionally, the math department will continue to work with the OIEAR to gather both qualitative and quantitative data to assess student self-efficacy. This work has been ongoing since 2012. The work is continuous due to constantly changing demographics and regularly updated best practices.

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Mathematics Faculty and OIERP

- **2.4 - Objective - Investigate the factors and promote solutions to increase student success and persistence through the math sequence.**

  Priority Rank: 11

  Start Date: 10/15/2020 **End Date:** 06/30/2024

  Responsible Person: Mathematics Faculty and OIERP

  Strategic Direction: 1. Promote Student Success

  Impact Type: Only Students

  Institutional Learning Outcome: Not Applicable

  Actions/Activities:

  - **2.4.a1 - Evaluate student success data**

    In order to facilitate data-driven decision-making, the department would like data on student success based on their grade in the previous math course. The department plans to review this data and then compare it to the best practices that were implemented in the classroom using SLO data. This will help the department adapt practices for our unique student needs and instructor strengths. This work has been ongoing since 2015. The work is continuous due to constantly changing demographics and regularly updated best practices.

    Start Date: 10/15/2020 **End Date:** 06/30/2024

    Responsible Person: Mathematics Faculty and OIERP

  - **2.4.a2 - Promote interventions to increase persistence in the mathematics sequence.**

    In addition to best practices found through research and conference and workshop attendance, the department plans to implement surveys seeking qualitative and quantitative data related to student persistence. The results of this survey will then be used for training workshops with all math faculty to help find ways to increase student persistence. This work has been ongoing since 2012. The work is continuous due to constantly changing demographics and regularly updated best practices.

    Start Date: 10/15/2020 **End Date:** 06/30/2024

    Responsible Person: Mathematics Faculty and OIERP

  - **2.4.a3 - Promote the use of Starfish for student retention and success**

    The department plans to share recommendations for Starfish integration into Canvas. This work has been ongoing with the assistance of our steller Starfish lead.

    Starfish Solutions is a retention solution program that helps to create an online student success environment, facilitating programs such as counseling and advising, tutoring, mentoring, and others–with the aim

of improving student success and retention. See a summary and explanation of workflow here.

- Some of the features of Starfish include:
- Viewing support networks for your courses
- Receiving early alerts for academic concerns and praise for a job well done
- Getting electronic referrals and other messages
- Viewing and following academic plans
- Signing up online for appointments with course instructors, counselors and advisors
- and Faculty can submit progress reports in real time and connect students to appropriate campus offices

Start Date: 10/15/2020 **End Date:** 06/30/2024

Responsible Person:

AB-705 Lead, Starfish Lead, Department Chair(s)

11. Comments

This space is provided for participants and managers to make additional comments. Comments are not required.

There are no comments for this plan.

12. Supporting Documents

This question is for attaching supplemental materials. Supporting documents are not required.

- Flex Day All Math Meeting SLO Training.pdf
- CommunityOfPractice_sampleMeetingInviation.pdf
- Starfish Messaging.pdf
- Mathematics Scheduling Matrix.xlsx
- Math Minutes 6 Year Review - 02_14_2020.pdf
- SLO's Updated 2019 w_ Institutional Outcomes.pdf
- Online Certified Instructors Math.pdf