BASIC PROGRAM INFORMATION

Program Review is about documenting the discussions and plans you have for improving student success in your program and sharing that information with the college community. It is also about linking your plans to decisions about resource allocations. With that in mind, please answer the following questions.

Program/Department Name: Department of Mathematics

Division Name: Physical Sciences, Mathematics and Engineering Division

Please list all team members who participated in this Program Review:

Name	Department	Position
Jeffery Anderson	Mathematics	Faculty
Zachary Cembellin	Mathematics	Faculty
Marnie Francisco	Mathematics	Faculty
Nicole Gray	Mathematics	Faculty
Marc Knobel	Mathematics	Faculty
Phuong Lam	Mathematics	Faculty
Debbie Lee	Mathematics	Faculty
Rick Martinez	Mathematics	Faculty
Patrick Morriss	Mathematics	Faculty
Rachel Mudge	Mathematics	Faculty
Sarah Munoz	Mathematics	Faculty
Young Hee Park Lee	Mathematics	Faculty
Kathy Perino	Mathematics	Faculty
Lori Silverman	Mathematics	Faculty
Jennifer Sinclair	Mathematics	Faculty
Brian Stanley	Mathematics	Faculty
Sarah Williams	Mathematics	Faculty
Charles Witschorik	Mathematics	Faculty
Teresa Zwack	Mathematics	Faculty

Number of Full Time Faculty: 19 **Number of Part Time Faculty:** 28

Please list all existing Classified positions: *Example: Administrative Assistant I*

none

SECTION 1: PROGRAM REFLECTION

1A. Program Update: Based on the program review data, please tell us how your program did last year. We are particularly interested in your proudest moments or achievements related to student success and outcomes.

Math 48 sequence (source: program review data)

The department is proud of the fact that our success rates in both M48A and M48B have been increasing over the last 3 years. This is particularly significant because the cut scores that were

established for M48A are lower than the cut scores were for M51 (M51 and M49 were replace by M48ABC). So, the new sequence is successful for students who would have placed into M105 prior to the M48 sequence. In part the increase in success rates might be attributable to an activity implemented as part of a National Science Foundation STEMway grant to increase success rates. Members of the math department, working with Ben Stefonik, adopted a policy of encouraging instructors of STEM gateway courses, namely M48A and M48B, to adopt a growth mindset intervention into their class activities. Students who completed the growth mindset intervention had a pass rate of 74.8%. Students in the control group had a pass rate of 69.4%. With a certain amount of caution, we can conclude that the growth mindset intervention increased success rates of Math 48 students by 5.4% in the classes were the intervention was implemented.

The department is also proud of the fact that our success rates in M48C are holding steady in the 60's and 66% in the last 3 years. M48C is very similar to the old M51. By putting trig later in the pre-calculus series, the success rates are now in the 60's, as opposed to the last 3 years M51 was taught (44% in 09/10, 41% in 10/11 and 55% in 11/12).

Statway™ Math 217/Math 57(source: program review data)

Statway™ had very good success rates last year, with success rates well above the institutional standard and that of the overall success rate for courses in the department. This is especially significant because this course takes developmental math students (students who place into Math 220) and has them begin to work on college level math filling in with algebra review when need. Additionally, we are proud that the success rates increased even with a larger enrollment. The grants from the Basic Skills and Equity committees that help to supply materials for students certainly contribute to the student's success. We are hopeful that this program will continue grow.

SLOs (source: SLO_work_that_we_are_proud_of.pdf)

Although it feels slow at times, we are nonetheless proud of the progress that we have made over the last year to establish a more useful framework for department wide discussions and the improvement of teaching, learning, and student success using the SLO framework. We will be adopting 3 SLOs for each course, and while the SLOs will be tailored to match the content of the course, the focus of the 3 SLOs will remain the same as follows:

- SLO #1: For each course, we have identified the conceptual underpinnings, as well as proposed means of demonstrating understanding thereof.
- SLO #2: For each course, we have identified the mechanical fluencies that we strive to develop in students.
- SLO #3: For each course, we have identified the primary applications that students will work with.

This structure will allow us to have full department discussion that span the courses offered.

STEM Center (source: STEM_and_STEM_Ctr.pdf)

The STEMway grant has helped to increase the services provided by the STEM Center (formerly the PSME center). The increased size and staffing of STEM center has also lead to increased communication between the supplemental instructors and classroom faculty, including having supplemental instructors sit in on developmental classes to increase the connection between what happens in the classroom and services provided in the center. The department has seen both an increase in the number of students using the center and an increase in the success rates for those that visit the center.

Hidden Successes (source: Successful_Failures.pdf)

Improving student success is a continuing focus of our teaching efforts in the math department. To identify progress requires appropriate metrics, and our progress is generally measured by the course success ratio defined by the college: number of passing grades divided by the number of students registered as of the census date. We have several critiques of using this metric as the sole measurement of student success, here we describe and document one, that students can be "successful" without earning a passing grade.

We argue for a more inclusive definition of student success on the basis of our experience with students identified as failures in the college-defined success metric (they either withdrew or earned a failing grade) who have shared with us their stories that can only be described as successful. Those stories are collected in an appendix.

The simplest example of this shortcoming of the college-defined success metric comes from a student who needs two (or more) attempts to earn a passing grade in a math course. In a case like this, our metric records one success in two (or more) attempts, producing a success metric of at most 50%. From the student's perspective, the success rate is 100%.

Another example comes from students who withdrew or failed the course because of life events, yet wrote about their positive experience and/or the positive lessons they took from it. Our success metric registers 0% for such a student, when that is clearly not an accurate assessment of such an outcome. We offer examples that we've heard about in the appendix. We assume there are many more we haven't heard about.

We don't anticipate replacing the college-defined success metric, but we hope that the examples in the appendix will at least temper any strict attention to it as the sole measure of our efforts to improve student success.

Math 1AH

We are proud of the work that faculty members have done on behalf of the department to create and offer an honors version of our Math 1A (Calculus I) course. The course was articulated on the first attempt, and is being offered as 6 units of honors credit. Math 1AH also has the distinction of being the first course of its kind offered at the CC level in the state of California. Fall 2015 is the first quarter the course is being offered. The faculty member teaching the course finds it very satisfying to teach these extremely hard working students, though it is also a tremendous amount of work on his part. Spring 2015, we are going to offer it again for the second time as recommended by the Honors Institute, which hopes to draw more students into the honors program.

Spirit of Cooperation

The members of the math department work really well together. Several times per year, we meet as a department. The agenda is always full, as faculty bring back to the department the numerous issues that arise both in class and also in committee meetings across campus. Our department is large and also varied in opinions and outlooks, but we can always rely on each other to listen carefully, and discuss thoughtfully. Every single member of our department cares deeply about teaching and learning. Committees spring up to tackle the work at hand and when someone needs help, there is always someone willing to step up and help.

1B. Program Improvement: What areas or activities are you working on this year to improve your program? Please respond to any feedback from the supervising administrator from last year's program review.

SLOs

The Math Department will be implementing and assessing new SLOs for our courses, because the SLOs for all the courses are aligned on themes, we are hopeful that we can have department wide discussions that will lead to improvements across the math curriculum.

Embedded Tutors:

Some of the Math instructors have started using embedded tutors in math 48A courses. These tutors help with the students in the classrooms while students are working on problems, and also work directly with the faculty member to run workshops for the students at least once per week. 48A students have a lot of the same challenges that math 105 students have and the faculty believe that this effort helps our students in those classes. This use of embedded tutors was done as part of our plans from last year's program review. The department will gather data to determine the effectiveness of the program and then if warranted make plans to expand the program.

Part-time Coordination:

This year two fulltime Math instructors will be coordinating part-time faculty. These coordinators will be compensated using the stipend that Foothill is providing for department chair type duties. In addition to doing department onboarding for new adjuncts, this coordination includes ordering textbooks and providing adjuncts with materials necessary for their courses (textbooks, calculators, access to online HW sites, supplying a faculty contact if they need guidance about the course etc.). This support will not be just for new adjuncts, but also continuing adjuncts that are teaching courses for the first time at Foothill. Additionally, the two faculty coordinators will assist in the hiring of new adjuncts, assist with student evaluations, and sending out communications regarding college and department news and information to help the adjuncts feel more connected to the department and college community.

Alternate Algebra Pathways:

This year we are using the Math 108, Accelerated Algebra Course to explore alternative algebra pathways. In the Fall 2015 quarter, the instructor is using the Carnegie Quantway™ materials together with other materials and worksheets developed by department faculty to assess the feasibility of using these materials on a broader basis. Several department faculty traveled to the AMATYC (American Mathematical Association of Two Year Colleges) annual conference and attended numerous session related to algebra alternatives.

Extending Math My Way:

Due to the increase in student demand, the department added another section of MMW, for a total of 7 sections running concurrently for Fall 2015. The nature and design of this guided self-paced course requires at least three sections to be running at the same time in order for the instruction and overall program to be effective. However the department does recognize the need to offer this course at an additional time to meet the needs of our diverse population. The department is planning on offering 5 sections of MMW during the day and 2 sections of MMW in the evening for Spring quarter. Although having 3 or more sections running concurrently is most effective, we hope that the Spring evening sections will gain enough demand to allow us to offer 3 evening sections in subsequent quarters.

The MMW program continues to work very well in serving the wide range of students needing remediation in pre-algebra. Those students that need a quick brush up on their basic skills do complete the course in 1 quarter and continue on their way in the math sequence the following quarter. Those that need more time to develop and master the necessary perquisite skills are given the opportunity to take the time needed to master them.

There are also students who struggle tremendously to master the material within the repeatable attempts specified by state rules. Using Basic Skills Funds, MMW has recently added 1 embedded tutor to each of its sections for the Spring 2014 and Fall 2015 quarters. In each section, the embedded tutor is assigned to work directly with about 5 students. Instructors identify the students who are at-risk of failing and needing additional support and the embedded tutor works with those students. In addition to helping these students with the math, the embedded tutors help these students stay focused, do drills, stay organized, and help with making a plan to complete their assignments. So far many of the students receiving embedded tutoring are showing improved success. MMW hopes to continue to receive embedded tutoring funding to address the needs of these highly at-risk students.

Placement:

The math department understands that course placement is an issue that greatly affects student success. Over-placed students lack the skill they need to be successful and under-placed students may become bored or resentful leading to lack of effort and ultimately lack of success. Research indicates that under-placement is bigger problem, though this often goes against faculty experience. Over-placed students are a more obvious classroom presence, as they tend to demand instructor time and attention out of proportion to their numbers. Under-placed students, on the other hand, are not often obvious to instructors, though their numbers can be far greater.

The math department is now using the Early Assessment Program to place students into our math courses. The EAP is a standardized assessment administered to 11th grade students in California. CSU's currently use the scores to place their incoming students. The math department adopted the following policy:

- If student received a “standards exceeded” result on the Math portion of EAP, the student is eligible for college-level math courses.
- EAP scores are valid for one year.

The English department will pilot a multiple measures assessment and placement project this spring, with the intent of increasing placements into college-level courses. Math and ESL departments may follow in the fall. Multiple measures are intended to reduce costs both to the state and to students, and further to improve course and degree completion rates. No assessment for placement is perfect, so it's important to examine the relative incidence of over- and under-placement.

1C. Measures of Success: What data or information will you use to measure your success (e.g. student success rates, changes in student or program learning outcomes)?

Tracking students through pathways:

While there are some students who need to take a single mathematics class at Foothill, it is much more common that students need to complete a series of courses to be able to satisfy their degree requirements. So, in order to know how the program as a whole is serving students we need to look

beyond the success rates for individual class. Thus, the math department is interested in looking at data that shows students success rates over consecutive classes giving us a better idea of how many students are successfully completing a math sequence. Getting this data would help us to be able to a measure of how well students are progressing from one class to another and help us to improve the ability of students to progress. The sequences we would like to look at are:

Non-transfer pathway: Math 235/230 to Math 220 to Math 105
Transfer pathway 1: Math 235/230 to Math 220 to Math 105 to Math 10
Transfer pathway 2: Math 235/230 to Math 220 to Math 105 to Math 48A
Transfer pathway 3: Math 48A to Math 48B to Math 48C to Math 1A
Transfer pathway 4: Math 48A to Math 48B to Math 48C to Math 1A to Math 1B
STEM pathway: Math 1A to Math 1B to Math 1C to Math 1D/2A/2B

A department representative has already contacted institutional research about getting this data.
The faculty members that are working with the STEMway grant have already been looking at pathway completion for the calculus sequence Math 1A-1B-1C and have used the data to verify that the STEMway interventions have moderately increase the flow of students through the calculus pathway. (source: Math_1A-1B-1C_Pathway_memo_2015.pdf)

Analyzing pathway data might also be able to help us identify effective time to contact students to encourage them to re-enroll. The STEMway grant was used to provide resources to do this type of intervention before the start of the Fall 2015 quarter. The responses from students to the email encouraging them to continue their studies are a powerful reminder that students appreciate our efforts to reach out to them. (source: Outreach_Feedback_from_student_fall_2015.pdf)

Early Alert Data

This quarter, several of the math department faculty are participating in the Early Alert Program. Many have found the information they are getting back about students to be extremely helpful. One faculty member had 11 students withdraw from a class, which was more than usual. From the communications with Adrienne Hypolite, the Early Alert coordinator, the faculty member was able to determine that 7 out of the 11 students withdrew from the class due to personal reasons, such as needing to work full-time and other issues related to family and health that resulted in the student not having enough time to put into studying and attending class. By tracking, compiling and monitoring this data, we may be able to determine where we need extra resources, such as psychological services and counseling.

Exploring Institutional Factors

A representative of the department submitted a data request to IR about institutional factors that might be associated with student persistence and success. As a department and a college we frequently look at average success rates but, as statistics instructors try to impress upon their students, averages can conceal a lot of variability. A faculty member from the department who was recently on PDL took an experimental design course and as a part of that course, did the semester project on the student persistence and success data in the courses taught over the last 5 years. The goal was to identify institutional factors associated with significant differences in the outcome metrics. Factors considered included the typical ones like which course it was and the academic term and year, but also looked at some others, like the course type (STEM, general education, developmental), meeting time, meeting days, total students registered originally and at census, number of class meetings per week, and length of the class in minutes and ultimately we could even look at factors like what building the classroom in or any other factor under institutional control. As a department we know that looking at such a study

we'll be finding associations and will not be able to make conclusions about causative relationships. However, a study like this can only identify factors worth investigating. This is particularly important because if we continue to solely look at summative results we are likely to miss the factors that lead to students withdrawing or failing courses.

Day 1 survey

Many faculty members in the department gather information from students early in the quarter to try to get to know the class better as a whole, as well as individuals. As a department we could explore creating a uniform set of questions that faculty could ask in such a "Day 1 Survey" that could be analyzed for correlations to success. This might better help us to understand the factors involved in student success, as well as help us in identifying students who need early alert services.

1D. EMP Goal: The 2015-2020 Educational Master Plan (EMP) includes the following goal:
"Create a culture of equity that promotes student success, particularly for underserved students."

Based on the program review data, tell us some of the things your program will be doing this year to support this goal. You will be asked to report on any accomplishments on your next comprehensive program review.

Assigning Help Resources

One department faculty member participated in the SDSU training in "Teaching Men of Color in the Community College." So far the faculty member has been implementing the workshop's research-based communication strategies in her Math 105 class. In the future, the faculty member recommends that the department explore shifting from recommending help resources (STEM center, foundations lab, PTT, etc. …) to assigning help resources, as recommended by the SDSU research.

Supporting Women in STEM

Although women are not part of the college's targeted group for Equity, we know that women are under-represented in STEM fields. Thus the math department in conjunctions with the PSME division is working to increase female representation in STEM courses.

Several math faculty attended the Women's Tech Educators Training conference in the summer. The conference focused on classroom ideas that could be implemented to appeal to women and minorities. Some of the ideas included using real-life applications to motivate student learning. Another idea was to create more community in our courses so that students feel more included.

Courageous Conversations

A few of the department faculty were able to participate in the Courageous Conversations Workshop offered at Foothill in Spring 2015. Those faculty members found the workshop to be very beneficial and would like to see the department as a whole participate in similar professional development opportunity. A faculty representative is currently discussing with the PSME dean the feasibility of having a division-wide flex day so that faculty have the opportunity to discuss topics dealing with race and diversity in higher education with a moderator. In order to address factors that lead to inequity, we as faculty need to have a strong awareness of what the issues are and have norms for discussing race and ethnicity. After we have developed a culture of understanding we can move on to coming up with

potential solutions and be better equipped to support these solutions and thus our students.

STEM Re-Entry Program for parents

Several division faculty were awarded a FHDA Chancellor's innovation grant to create the STEM Re-Entry Program for parents. This program targets students who are parents and are planning on majoring in a STEM field. The program offers students a scholarship along with the opportunity to do an internship in a STEM related field. The requirements are similar but somewhat less than the NSF STEM scholarship to take into account that these students might not have as much time to dedicate to taking 2 STEM courses each quarter because of childcare duties.

Alternative Pathways

The data for the Statway™ pathway shows it has quadrupled the success rate for African-American and Latino students while producing success rates well above the national and college averages. We are expending the number of Statway courses offered this year and continuing to train new faculty to teach this type of pedagogy that has proven to decrease the achievement gap.

Access

In a broad sense access is still an issue for many students, and anecdotally, especially those from targeted populations. Many students simply do not have the supplies that they need to be successful in their courses. They don't have books, calculators, and sometimes don't have pencils, erasers or notebook paper. They also lack reliable access to computers to complete online assignments that are a part of many of the courses taught in the department. The math department and the PSME division as a whole have done some nice things to help. For example, many calculators have been made available through the STEM Center for students to borrow to use for the quarter. Additionally the creation of the Foundations Lab has provided the students in the lower classes an environment to learn where they don't have to feel intimidated by the students in the higher classes as well as providing additional computers to be used for online assignments. Embedded tutors in many of the "developmental" classes provide academic support in the classroom and a bridge to the STEM Center resources. However, many students still do not have the resources they need to succeed, so we will, as a department, try to figure out how to connect students to the appropriate resources.

SECTION 2: PROGRAM OBJECTIVES & RESOURCE REQUESTS

2A. New Program Objectives: Please list any new objectives (do not list your resource requests).

Program Objective	Implementation Timeline	Progress Measures
No New Program Goals		

2B. Resource Requests: Using the table below, summarize your program's unfunded resource requests. Refer to the Operations Planning Committee (OPC) website for current guiding principles, rubrics and resource allocation information.

Resource Request	$	Program Objective (Section 2A)	Type of Resource Request			
			Full-Time Faculty/Staff Position	One-Time B-Budget Augmentation	Ongoing B-Budget Augmentation	Facilities and Equipment
compensation for PT faculty to	$4000	Related to previous	☐	☐	☒	☐

participate in department activities (mtgs, course level discussions, meeting with mentor)		goal (2014) 1. Provide much needed support and guidance for our adjuncts.				
Mathematica Software license for STEM center **Dean's Note: Can be funded by Lottery money**	$5500	Related to previous goal (2014) 6. Develop the PSME Center into a faculty resource to support student success.	☐	☐	☒	☐
MATLAB software license for STEM center **Dean's Note: Can be funded by Lottery money**	$500 annual + $1500 every 3 years	Related to previous goal (2014) 6. Develop the PSME Center into a faculty resource to support student success.	☐	☐	☐	☒
Classroom set of Graphing Calculators **Dean's Note: Can be funded by Lottery money**	$4500	Related to previous goal (2014) 7. Enhance outreach to students to increase retention and success.	☐	☐	☐	☒
Embedded tutors	$5000	Related to previous goal (2014) 7. Enhance outreach to students to increase retention and success.	☐	☐	☒	☐

PT mentoring	$20,000	See section 2C below	☐	☐	☒	☐

2C. Unbudgeted Reassigned Time: Please list and provide rationale for requested reassign time.

PT mentor $20,000
As described in section 1C above student enrolling in math classes usually need to finish a sequence of courses in order to be successful. In fact, any student placing into Math 235 or Math 220 will need to take multiple math classes in order to satisfy their quantitative requirement for graduation of transfer. We feel that we can increase the success rates by also increasing the mentoring for PT faculty who teach in the mathematics department. This requires release time so that the faculty member doing the mentoring has time to sit in on classes, do informal evaluations and time to schedule meetings. Furthermore this will address many of the program review goals that we have established. Namely:

1. Provide much needed support and guidance for our adjuncts.
2. Improve teaching consistency among instructors.
3. Develop and disseminate course by course collection of teaching resources.

SECTION 3: LEARNING OUTCOMES ASSESSMENT SUMMARY

3A. Attach 2014-2015 Course-Level Outcomes: Four Column Report for CL-SLO Assessment from TracDat. Please contact the Office of Instruction to assist you with this step if needed.

3B. Attach 2014-2015 Program-Level Outcomes: Four Column Report for PL-SLO Assessment from TracDat. Please contact the Office of Instruction to assist you with this step if needed.

SECTION 4: FEEDBACK AND FOLLOW-UP

This section is for the Dean/Supervising Administrator to provide feedback.

4A. Strengths and successes of the program as evidenced by the data and analysis:

The Math Department has done an excellent job addressing multiple concerns around student success and faculty professional development. Many of these efforts are underway with data to be generated within the next year or two. While developing all of these initiatives, the Math Department has grown (0.9% in WSCH) over the past year, while dramatically increasing productivity 5.9% (from 520 to 551), thereby surpassing the College goal. Note this is before the class size increase for transfer-level courses. Based on this increase, productivity for the 2015-2016 AY is anticipated to be higher. Course success rates have remained steady (60% over a 3-year period). Also noteworthy is a 9.6% increase in Latino/Latina student enrollment in math courses over the past year (2008 to 2194), resulting in a 2% increase overall of Latino/Latina student enrollment in the Math Department (22% of total).

The faculty should be commended on implementing a variety of techniques/initiatives to support students. Examples include: growth mindset intervention which may be positively affecting success rates in Math 48A; Statway maintaining high success rates; increased collaboration between the STEM Center, supplemental instructors and classroom instructors; embedded tutoring; spearheading Early Alert; scheduling classes at a variety of times to accommodate students' time restrictions; and investigating other algebra pathways. It will be exciting to see the results of work around Student Equity in the coming year and the impact it will have on students.

As large and diverse as the Math Department is, the faculty members do an excellent job fostering a collaborative environment, where many voices are heard and appreciated. The work faculty perform both inside and outside the classroom (e.g., Academic Senate, Curriculum committee, hiring committees, tenure committees, mentoring, NSF grant work, etc.) has benefited both students and the College immensely.

4B. Areas of concern, if any:

Areas of concern that the math faculty should address include the following:

1. Success rates in online courses lag that of face-to-face courses in Math 1A (30% versus 57%), Math 1B (36% versus 57%), and Math 105 (35% versus 53%). The metric of "true success" versus institutional metrics is debated in this PR, but utilizing IR data in which the College reports to the State, this achievement gap is an area of concern.

2. In the 6 pathways listed, Math 12 (Business Calculus) was excluded. Considering business and economics majors do heavily enroll in this course, tracking a Math 105-48A-12 path way may be of interest.

3. For a department of this size, coordination of part-time faculty (who shoulder the bulk of the teaching) is paramount. The recent infusion of College funds for PT mentoring is much appreciated but additional funding should be considered to provide adequate support.

4. The success rate of Math 105 remains one of the lowest in the Department and a major hurdle for students. The faculty are aware of this and the initiatives listed in this PR will attempt to improve success rates.

4C. Recommendations for improvement:

Recommendations to address the 4 stated areas of concern above include the following:

1. With the conversion to Canvas and discussion about best practices for online courses occurring in the 2015-2016 AY, faculty may want to work with Heather Garcia, the instructional designer at OEI, who can recommend methods that may help to increase student success. Collaboration with the STEM Center to enhance tutoring resources for online students may also help. Finally, similar to textbook selection, faculty may want to vet a variety of online CMS throughout the country to see if other institutions have experienced increased student success rates with a particular system.

2. With the anticipated offering of Math 12 online in AY 2016-2017, enrollment most likely will grow. Gathering and analyzing information from IR may help to develop a variety of student success resources.

3. A strong request from the faculty to OPC should be made to acquire funding to support a part-time mentoring position.

4. In addition to the initiatives listed in this PR, students repeating Math 105 for a third time will be supported by one-on-one tutoring funded by the Basic Skills Initiative. The department should track the impact of these efforts. Also, alternative algebra pathways that are currently being investigated should be heavily discussed at department meetings to determine their viability.

4D. Recommended Next Steps:

☒ Proceed as Planned on Program Review Schedule
☐ Further Review / Out-of-Cycle In-Depth Review

Upon completion of Section 4, the Program Review document should be returned to department faculty/staff for review, then submitted to the Office of Instruction and Institutional Research for public posting. Please refer to the Program Review timeline.

Unit Course Assessment Report - Four Column

Foothill College

Department - Mathematics (MATH)

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Mathematics (MATH) - MATH 10 - ELEMENTARY STATISTICS - Summarize - The student will be able to describe and summarize data effectively. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Students are given a question related to the particular learning objective. See Related Documents for a list of the questions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students will get the question correct.	06/22/2015 - 74% of the students correctly answered the 2nd problem on the related document **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** . **GE/IL-SLO Reflection:** The students appeared to be able to correctly interpret the graph. The ability to summarize data graphically appears to have mastered by the students. **Related Documents:** Math10_SLO_questions_Sp14	06/22/2015 - The students appeared to be able to correctly interpret the graph. The ability to summarize data graphically appears to have mastered by the students.
Department - Mathematics (MATH) - MATH 10 - ELEMENTARY STATISTICS - Probability - The student will be able to determine the likelihood of events. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Students are given a question related to the particular learning objective. See Related Documents for a list of the questions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the students will get the question correct.	06/22/2015 - 70% of the students answered the 4th problem correctly on the related document. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** . **GE/IL-SLO Reflection:** At least 70% of the students were able to answer a basic probability question related to the experiment of rolling 2 dice and recording the sum. **Related Documents:** Math10_SLO_questions_Sp14	06/22/2015 - At least 70% of the students were able to answer a basic probability question related to the experiment of rolling 2 dice and recording the sum.
Department - Mathematics (MATH) - MATH			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
10 - ELEMENTARY STATISTICS - Inferences/Predictions - The student will be able to make accurate inferences or predictions about groups of interest using limited information. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Students are given a question related to the particular learning objective. See Related Documents for a list of the questions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the students will get the question correct.	06/22/2015 - 71% of the students correctly answered the 3rd problem on the related document. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** . **GE/IL-SLO Reflection:** When given a skewed right data set, 71% of the students understood that the median for the data set would be smaller than the mean. **Related Documents:** Math10_SLO_questions_Sp14	06/22/2015 - When given a skewed right data set, 71% of the students understood that the median for the data set would be smaller than the mean.
Department - Mathematics (MATH) - MATH 10 - ELEMENTARY STATISTICS - Concepts and Connections - Students will develop conceptual understanding of descriptive and inferential statistics. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 10 - ELEMENTARY STATISTICS - Mechanical Fluencies - Students will demonstrate the ability to compute descriptive statistics, calculate confidence			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
intervals, and carry out tests of hypotheses. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 10 - ELEMENTARY STATISTICS - Applications - Students will formulate conclusions about a population based on analysis of sample data. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 105 - INTERMEDIATE ALGEBRA - Graphs of Functions - Identify and describe the basic shape of the graph of the following functions: absolute value, rational, radical, quadratic, cubic, exponential, and logarithmic (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Online assessment using Coursecompass from Pearson given to all sections: Recognize the graph of a polynomial function from the degree of the polynomial. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students who took the assessment will answer correctly **Assessment Method:** multiple choice question **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% answer correctly **Assessment Method:** A multiple choice question on the final exam		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	was used to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% answered correctly.		
Department - Mathematics (MATH) - MATH 105 - INTERMEDIATE ALGEBRA - Solving Equations - Solve algebraically, graphically, or numerically the following: linear inequalities and absolute value, rational, radical, polynomial, exponential, and logarithmic equations (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Online assessment using Coursecompass from Pearson given to all sections: Solve equations that contain radical expressions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students who took the assessment will answer correctly		
	Assessment Method: multiple choice question **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% answer correctly	10/09/2015 - 5 different multiple choice questions were given for this assessment. The rate of success on the problems with absolute value equations (58/81= 71%) and quadratic equations (60/81 = 74%) was higher than those involving rational (45/81 =56%), and radical (42/81 = 52%) equations. The worst performance was identifying equations that had no solution. This is likely because there is very little procedural work involved in identifying 'no solution' for the types of equations given as choices. And, the emphasis in our current math 105 is on algebraic procedures. The lower success for rational and radicals is also not surprising because the radical problem given involved and extraneous solution, which is always difficult for students to identify. **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** Solving equations is computational by nature.	10/09/2015 - Work with faculty to emphasize checking solutions graphically after finding the solutions algebraically. This will help students identify computational errors as well as help identify extraneous solutions.
	Assessment Method: A multiple choice question on the final exam		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	was used to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70 % answered correctly.		
Department - Mathematics (MATH) - MATH 105 - INTERMEDIATE ALGEBRA - Simplifying Expressions - Simplify the following expressions: rational, radical, polynomial, exponential, and logarithmic (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Online assessment using Coursecompass from Pearson given to all sections: Use rational exponents to simplify radical expressions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students who took the assessment will answer correctly		
	Assessment Method: multiple choice question **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% answer correctly		
	Assessment Method: A multiple choice question on the final exam was used to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% answered correctly		
Department - Mathematics (MATH) - MATH 105 - INTERMEDIATE ALGEBRA - Applications and Modeling - Apply appropriate function in a contextualized situation (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Online assessment using Course Compass from Pearson given to all sections: Solve problems by writing equations containing rational expressions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students who take the assessment will answer correctly.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method: open ended question **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students get 9 or more of 12 possible points		
	Assessment Method: A multiple choice question on the final exam was used to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% answered correctly.		
Department - Mathematics (MATH) - MATH 105 - INTERMEDIATE ALGEBRA - Concepts and Connections - Students will develop conceptual understanding of the relationship between a function and its graph. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 105 - INTERMEDIATE ALGEBRA - Mechanical Fluencies - Students will demonstrate the ability to simplify linear, quadratic, rational, radical, exponential, and logarithmic expressions and solve equations. (Created By Department - Mathematics			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
(MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 105 - INTERMEDIATE ALGEBRA - Applications - Students will solve problems involving applications of linear, quadratic, exponential, and logarithmic growth. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 108 - ACCELERATED ALGEBRA - Graphs of Functions - Identify and describe the basic shape of the graph of the following functions: linear, absolute value, rational, radical, quadratic, cubic, exponential, and logarithmic (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Online assessment using internet course management assesessment system administered to students: Recognize the graph of a polynomial function from the degree of the polynomial. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students taking taking the assessment will answer correctly. **Assessment Method:** Assessed using a question(s) on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz		
Department - Mathematics (MATH) - MATH 108 - ACCELERATED ALGEBRA - Solving	**Assessment Method:** Online assessment using internet course		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Equations - Solve algebraically, graphically, or numerically the following: linear inequalities and linear, absolute value, rational, radical, polynomial, exponential, and logarithmic equations (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	management assesessment system administered to students: Solve equations that contain radical expressions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students taking taking the assessment will answer correctly.		
	Assessment Method: Multiple Choice question on Final Exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students answer correctly	06/26/2015 - 69.6% of students answered correctly **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** embedded tutors in classroom and leading breakout sessions for students outside of class time **GE/IL-SLO Reflection:** The goal of 70% of students answering correctly was very nearly met. This is in part do to the embedded tutors in the classroom. We can make further gains by having the embedded tutors lead breakout sessions outside of class time.	06/26/2015 - The goal of 70% of students answering correctly was very nearly met. This is in part do to the embedded tutors in the classroom. We can make further gains by having the embedded tutors lead breakout sessions outside of class time.
Department - Mathematics (MATH) - MATH 108 - ACCELERATED ALGEBRA - Simplifying Expressions - Simplify the following expressions: linear, rational, radical, polynomial, exponential, and logarithmic (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Online assessment using internet course management assesessment system administered to students: Use rational exponents to simplify radical expressions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students taking taking the assessment will answer correctly.		
Department - Mathematics (MATH) - MATH 108 - ACCELERATED ALGEBRA - Applications and Modeling - Apply	**Assessment Method:** Online assessment using internet course		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
appropriate function in a contextualized situation (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	management assesessment system administered to students: Solve problems by writing equations containing rational expressions. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students taking taking the assessment will answer correctly.		
Department - Mathematics (MATH) - MATH 108 - ACCELERATED ALGEBRA - Concepts and Connections - Students will develop conceptual understanding of four representations of a function: algebraic model, graph, table, verbal description. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and connecting multiple representations. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 108 - ACCELERATED ALGEBRA - Mechanical Fluencies - Students will demonstrate the ability to simplify linear, quadratic, rational, radical, exponential, and logarithmic expressions and solve equations. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:**			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Active			
Department - Mathematics (MATH) - MATH 108 - ACCELERATED ALGEBRA - Applications - Students will solve a variety of applications related to linear, quadratic, exponential, and logarithmic growth. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 11 - FINITE MATHEMATICS - Probability - Student will be able to find the probability of various events. (Created By Department - Mathematics (MATH)) **Start Date:** 04/08/2013 **End Date:** 06/28/2013 **Course-Level SLO Status:** Inactive	**Assessment Method:** Students were given a chart of data and asked to compute 6 probabilities (including conditional probability) based on the data. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 80%		
	Assessment Method: Students answered a question on the final exam related to this topic. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 60%		
Department - Mathematics (MATH) - MATH 11 - FINITE MATHEMATICS - Financial Math - Student will be able to use financial math to compute the interest. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Ask a student to compute interest **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the students will answer correct		
	Assessment Method: Students completed a problem on the final	11/29/2015 - SJSU no longer requires this for their business degree. So we are not currently offering	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	exam to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 60%	it. We are waiting to see if demand grows. No slos were assessed during 2014/2015 AY. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015	
Department - Mathematics (MATH) - MATH 11 - FINITE MATHEMATICS - Linear Programing - Student will be able to use linear programming to optimize a function. (Created By Department - Mathematics (MATH)) **Start Date:** 04/08/2013 **End Date:** 06/28/2013 **Course-Level SLO Status:** Inactive	**Assessment Method:** Students were given a word problem and asked to maximize the profit. The problem required students to model the scenario with a system of linear inequalities and to solve using the Simplex method. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70%		
	Assessment Method: Students answered a question on the final exam related to this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 60%		
Department - Mathematics (MATH) - MATH 11 - FINITE MATHEMATICS - Just a Placeholder Until We Decide Whether to Offer This Course - Students will reason with definitions & theorems, connect concepts, implement algebraic/computational processes, connect multiple representations, build notational fluency and communicate in the context of problems related to business and finance. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:**			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 12 - CALCULUS FOR BUSINESS & ECONOMICS - Application - A student will be able to apply elementary ideas of single variable differential and integral calculus to the solution of application problems from the business, economics, and the social sciences. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** A multiple choice question was created to address this SLO **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70 % correct.		
	Assessment Method: Multiple choice question on the final exam testing student comprehension of total sales as a definite integral of the rate of sales over a given time period. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students were able to answer the problem correctly.		
	Assessment Method: A sample of three multiple-choice problems were selected from the final exam and the average number of correct responses for the three problems was recorded. The application problems involved (1) maximizing a revenue function, (2) solving a related rates problem in business, and (3) finding equilibrium price. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least a 70% average for for the three application problems chosen	03/29/2015 - An average score of 76% correct for the three problems was achieved by students. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Continued support of tutors capable of tutoring Math 12 in the STEM Center **GE/IL-SLO Reflection:** The ability to solve the three application problems chosen requires students to think critically and analytically, and also requires students to perform computations. **Related Documents:** M12(W15)_SLO-StudentPrompts.pdf	03/29/2015 - Students performed at a level above the target for success. No further action is recommended for this assessment.
Department - Mathematics (MATH) - MATH 12 - CALCULUS FOR BUSINESS &	**Assessment Method:** A three-part question was administered to		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
ECONOMICS - Mathematical Language and Notation - A student will be able to discuss and write solutions to applied calculus problems from business, economics, and the social sciences using appropriate mathematical language and notation. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	the students. The question required students to compute, discuss and write up a solution. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70 % average on this question.		
	Assessment Method: A five part show-your-work question was given to students. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Average score for the class will exceed 70%.		
	Assessment Method: A written project asking students to solve an applied problem from business and write up their findings in a paper was given to students. **Assessment Method Type:** Class/Lab Project **Target for Success:** At least 70% of students scored at 70% or higher on the exam.		
	Assessment Method: A written project asking students to solve an applied problem from business and write up their findings in a paper was given to students. **Assessment Method Type:** Class/Lab Project **Target for Success:** At least 70% of students scored at 70% or higher on the exam.	03/29/2015 - About 81% of students achieved at least 70% on the written class project for the class. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Continued support of tutors capable of tutoring Math 12 in the STEM Center **GE/IL-SLO Reflection:** The ability to successfully create such a class project involves computation, critical and analytic thinkings, as well as communication (communicating the mathematical ideas to an audience in written form). **Related Documents:**	03/29/2015 - Students performed well above the minimum target for success on this assessment. No further action is recommended.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		M12_WrittenProject-Prompt.pdf	
Department - Mathematics (MATH) - MATH 12 - CALCULUS FOR BUSINESS & ECONOMICS - Concepts and Connections - Students will develop conceptual understanding of limits, rates of change, and integrals. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 12 - CALCULUS FOR BUSINESS & ECONOMICS - Mechanical Fluencies - Students will demonstrate the ability to compute limits, rates of change, and integrals. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 12 - CALCULUS FOR BUSINESS & ECONOMICS - Applications - Students will solve problems involving rates of change and integration drawn from business, economics, and the natural sciences.			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
(Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 17 - INTEGRATED STATISTICS II - Inferences - Successful students will be able to draw appropriate inferences from data in the presence of uncertainty. (Created By Department - Mathematics (MATH))			
Department - Mathematics (MATH) - MATH 17 - INTEGRATED STATISTICS II - Hypothesis Testing - Successful students will be able to carry out and critically assess all steps in a hypothesis test, from the design of the study and the collection of data to the production of a report which summarizes the data and the statistical findings. (Created By Department - Mathematics (MATH))			
Department - Mathematics (MATH) - MATH 1A - CALCULUS - Differentiation - Use derivatives to graph, and to model and solve application problems using accurate mathematical notation. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** common final: Suppose f(x) and g(x) are both differentiable at x=a. Let h(x)=f(x)/F(x), where F(x)=f(g(x)). If f and g are defined in the table, find h'(a) x f(x) f'(x) g(x) g'(x) a -1 -2 2 1/2 2 3 -3 7 5 **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% success rate **Assessment Method:** Common Final - Written/Open ended problem on using calculus to minimize the		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	cost of making a certain box (see attached related document). **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the students will get at least a C (70%) or better on this problem. **Related Documents:** MATH 1A SLO #2 W'13		
	Assessment Method: A multiple choice question common to instructor's final exams. (See attached document). **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% or more of the students will select the correct answer choice for each question.	01/02/2015 - Over 70% of the students answered the question correctly. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** None **GE/IL-SLO Reflection:** The question required computation and critical thinking skills.	01/02/2015 - No action plan is necessary since the target was met.
	Assessment Method: A multiple choice question which is common to all instructors final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 75% of the students will select the correct multiple choice answer. **Related Documents:** MATH1ASLOQuestionFall2014.pdf		
Department - Mathematics (MATH) - MATH 1A - CALCULUS - Limits and Derivatives - Define, calculate with various techniques, and demonstrate an understanding of, limits, derivatives, and simple antiderivatives using accurate mathematical notation. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:**	**Assessment Method:** common final: Find the vales of a and b that make the following function differentiable everywhere: f(x)= {x^2 for x less or equal to 2; ax+b for x >2} **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% success rate		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Inactive	**Assessment Method:** Open Ended Question on a Common Final - Use the definition of the derivative to find the derivative function given some f(x) and using correct limit notation and algebra skills. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the students will get a C (70%) or better on this question.		
	Assessment Method: Multiple Choice question appearing on each instructor's final exam. (See attached document). **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% or more of the students will select the correct answer choice for this problem.		
Department - Mathematics (MATH) - MATH 1A - CALCULUS - Concepts and Connections - Students will develop conceptual understanding of limits and rates of change of functions of a single variable. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1A - CALCULUS - Mechanical Fluencies -			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Students will demonstrate the ability to compute limits and rates of change for functions of a single variable. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1A - CALCULUS - Applications - Students will solve problems involving applications of limits and rates of change of functions of a single variable. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1AH - CALCULUS I HONORS - Differentiation - Use derivatives to graph, and to model and solve application problems using accurate mathematical notation (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1AH - CALCULUS I HONORS - Limits and Derivatives - Define, calculate with various techniques, and demonstrate an understanding of limits, derivatives, and simple antiderivatives using accurate			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
mathematical notation. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1AH - CALCULUS I HONORS - Proofs - Use formal definitions and theorems with mathematical proof techniques to prove limits, derivative values, and relevant theorems. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1AHP - CALCULUS I HONORS SEMINAR - Proofs - Use formal definitions and theorems with mathematical proof techniques to prove limits, derivative values, and relevant theorems. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1AHP - CALCULUS I HONORS SEMINAR - Real World Projects - Complete applied real world problem projects with solutions and relevant explanations, accompanied with the use of mathematical typesetting software. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1B - CALCULUS - Fundamental Theorem of Calculus - A successful student will be able to approximate definite integrals and evaluate them exactly, using either areas or the Fundamental Theorem of Calculus, as	**Assessment Method:** Pre-test **Assessment Method:** Two multiple choice questions: one for evaluating with the FTC and the other for		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
appropriate. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	estimating. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 80% correct		
	Assessment Method: An open-ended two part question was given on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Target for success to be at least 70% on both parts.		
	Assessment Method: Multiple-choice question on common final exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students get question correct.		
	Assessment Method: Multiple choice question on final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Goal: 80% of students get this correct. (It's a very straight-forward question.) **Related Documents:** Assessment Questions for Math 1B, W2014.docx Assessment Questions for Math 1B, W2014.pdf		
Department - Mathematics (MATH) - MATH 1B - CALCULUS - Applicatio - A successful student will be able to model, solve, and interpret (in context) application problems involving definite integrals or first order separable differential equations. (Created By Department - Mathematics	**Assessment Method:** open ended question about differential equations **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 80% of students answer correctly		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
(MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Three part problem involving the first order separable differential equation was given on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the class achieves at least 75% of the problems correct.		
	Assessment Method: A four-part open-ended question was given on a common final exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Average score above 70%. **Related Documents:** 1B.SLO Problem.F2012		
	Assessment Method: A multiple-choice question was included on Final Exam by most instructors. One instructor chose to give an alternative, open-ended question on the final. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Goal: 70% of students get this correct. **Related Documents:** Assessment Questions for Math 1B, W2014.pdf Assessment Questions for Math 1B, W2014.docx		
Department - Mathematics (MATH) - MATH 1B - CALCULUS - Mathematical Language and Notation - A successful student will be able to understand, interpret, and use appropriate mathematical language and notation when solving integration problems. (Created By Department - Mathematics	**Assessment Method:** Students asked to briefly discuss the meaning of half-life. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 80% give clear, correct answers		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
(MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** A four part question was given on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the class achieves at least 75% correct.		
	Assessment Method: Open-ended question on final exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Average score above 70%.	08/13/2015 - Two questions were given on the final exam to assess this SLO. Each question had multiple parts. For the first question, 66% of the students scored above 70% and for the second question, 58% of the students scored above 70%. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** None requested at this time. **GE/IL-SLO Reflection:** To answer these questions successfully, students needed to be able to interpret what an integral meant within a particular context, to explain this interpretation using written words, and to compute the value of the integral. These questions addressed the communication, computation, and critical thinking IL-SLO's.	08/13/2015 - The target was met so no action plan has been created.
	Assessment Method: Multiple Choice Question on Final Exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students will answer this correctly. **Related Documents:** Assessment Questions for Math 1B, W2014.pdf Assessment Questions for Math 1B, W2014.docx		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method: Integration exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students will earn a score of at least 70%.	08/31/2015 - Ave = 76%, Med = 84%, Q1 = 61%. Overall I think that the class did quite well. As for the 25% of students getting 61% or less, I'll have to see what I can do to motivate them. Honestly, I thought it was a pretty easy test (trig sub problem exempted) and those that did poorly just did terribly (i.e., were not doing the homework and missed even the easiest problems). **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** None **GE/IL-SLO Reflection:** This assessment requires students to: • provide focused and coherent written presentations (Communication) • apply mathematical concepts and reasoning (Computation) • exercise judgement and make deciscions (Critical Thinking) **GE/IL-SLO Reflection:** **Related Documents:** 1B.SLOAssessment4.pdf	10/14/2015 - Since target was met, no action plan is warranted.
		08/31/2015 - 50% scored 70% or higher. These are uncommonly poor results on this assessment. Watch next year to see if this is just an outlier, as suspected. **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** None **GE/IL-SLO Reflection:** This assessment requires students to: • provide focused and coherent written	10/14/2015 - "Watch and see" to determine whether this level of performance is an outlier or persistent.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		presentations (Communication) • apply mathematical concepts and reasoning (Computation) • exercise judgement and make deciscions (Critical Thinking) **Related Documents:** M1B.SLO Assessment5.pdf	
	Assessment Method: Questions given on midterm. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students will score satisfactory/70% or higher.	10/14/2015 - Assessment: "Write a formula for the area between the functions and Then evaluate the integral. Please show all work." 12/14 were able to correctly construct an integral that represented the given area. A few of these 12 did not evaluate the integral correctly due mostly to minor arithmetic mistakes. The degree to which students “discussed” the integration problem varied widely, probably because of my prompt. I do think however that it is clear that my students showed in most cases that they knew how to write solutions properly. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** None **Resource Request:** None **GE/IL-SLO Reflection:** This assessment requires students to: • provide focused and coherent written presentations (Communication) • apply mathematical concepts and reasoning (Computation) • exercise judgement and make deciscions (Critical Thinking) **GE/IL-SLO Reflection:** This assessment requires students to: • provide focused and coherent written presentations (Communication)	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		• apply mathematical concepts and reasoning (Computation) • exercise judgement and make deciscions (Critical Thinking)	
		10/14/2015 - 75% of students taking this assessment scored 70% or better. I thought that this was decent, better than many quarters. Some additional students were also approaching proficiency. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** None now. In future, college might consider $5/student materials fee to cover cost of organizational/communication supplies. **GE/IL-SLO Reflection:** This assessment requires students to: • provide focused and coherent written presentations (Communication) • apply mathematical concepts and reasoning (Computation) • exercise judgement and make deciscions (Critical Thinking) **Related Documents:** M1B.SLO Assessment2.docx	10/14/2015 - Continue to investigate the effectiveness of binders and task lists designed to support students in managing their workload. If success continues, then consider asking for implementation of a materials fee to transfer cost from instructor to students.
	Assessment Method: Open-ended question on final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students will answer questions correctly.	10/14/2015 - 25% answered Question 1 correctly; 48% answered Question 2 correctly. Compared to previous quarter's, students from the Spring quarter performed poorly overall, mostly due to a weak understanding in Algebra and correct mathematical syntax. I think that these factors inevitably affect any assessments in higher classes. In question #1, students had problems remembering Riemann sum formulas and working with summation notation. In problem #2, students	10/14/2015 - Wait and watch. Since students performed poorly overall in the Spring quarter, watch to see if this is a trend or an outlier.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		had difficulty using integration to solve the IVP using separation of variables. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment requires students to: • provide focused and coherent written presentations (Communication) • apply mathematical concepts and reasoning (Computation) • exercise judgement and make deciscions (Critical Thinking **GE/IL-SLO Reflection:** This assessment requires students to: • provide focused and coherent written presentations (Communication) • apply mathematical concepts and reasoning (Computation) • exercise judgement and make deciscions (Critical Thinking) **Related Documents:** 1B.SLOAssessment1.docx	
Department - Mathematics (MATH) - MATH 1B - CALCULUS - Concepts and Connections - Students will develop conceptual understanding of integration of functions of a single variable. They will learn to demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1B - CALCULUS - Mechanical Fluencies - Students will demonstrate the ability to compute and approximate integrals of functions of a single variable. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1B - CALCULUS - Applications - Students will solve problems involving applications of integration of functions of a single variable. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1C - CALCULUS - Sequences and Series - Students will be able to apply the theories and techniques of sequences and series to solve application problems. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:**	**Assessment Method:** In class #1, students were given 20 minutes to complete the three assessment questions. The teacher graded the results. In class #2, each student was given 25 minutes to complete the three assessment questions. They exchanged papers and graded each others paper on a scale of 0 -5.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Inactive	A score of 3 or higher is considered at least a C grade. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will get at least a C grade. **Related Documents:** SLOfor Math1CQuestions.doc		
	Assessment Method: Students were given the question and asked to answer the question. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will get a grade of C or better.		
	Assessment Method: The students were given a free-response question on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will score 70% or better on this question.		
Department - Mathematics (MATH) - MATH 1C - CALCULUS - Multivariable functions and relations - Students will be able to apply the theories and techniques of functions and relations of many variables to solve problems. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** In class #1, students were given 20 minutes to complete the three questions. The teacher graded the papers. In class #2, each student was given 25 minutes to complete the questions. The students then exchanged papers with other students and graded other student's papers on a scale of 0 - 5. A score of 3 or higher is considered at least a C grade. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will get a grade	06/10/2015 - 83% of students got a C or better on the question **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** none **GE/IL-SLO Reflection:** critical thinking **Related Documents:** Math 1C F14 SLO Question	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	of C or higher. **Related Documents:** SLOfor Math1CQuestions.doc		
	Assessment Method: Students were given the question and asked to answer the question **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will get a grade of C or higher.		
	Assessment Method: The students were given a free-response question on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will score 70% or higher.		
Department - Mathematics (MATH) - MATH 1C - CALCULUS - Applications involving Differential Calculus - Students will be able to apply the theories and techniques of differential calculus including directional derivatives and gradient vectors to solve application problems. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** In Class #1, students were given 20 minutes to complete the three assessment questions. The teacher graded the papers. In class #2, each student was given 25 minutes to complete the questions. The students then exchanged papers with other students and graded other student's papers on a scale of 0 - 5. A score of 3 or higher is considered at least a C grade. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students will score a grade of C or higher. **Related Documents:** SLOfor Math1CQuestions.doc		
	Assessment Method: Students were asked the question and then answered the question		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method Type: Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will get a C grade or higher		
	Assessment Method: The students were given a free response question on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students should score 70% or higher.		
Department - Mathematics (MATH) - MATH 1C - CALCULUS - Concepts and Connections - Students will develop conceptual understanding of sequences and series and functions of multiple variables and their rates of change. They will learn to demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1C - CALCULUS - Mechanical Fluencies - Students will demonstrate the ability to model lines and planes in space and calculate partial and directional derivatives of functions of multiple variables. (Created By Department - Mathematics (MATH))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1C - CALCULUS - Applications - Students will solve problems involving applications of functions of multiple variables and series. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1D - CALCULUS - Computation - A student will be able to perform various types of computations involving double and triple integrals, parameterization of curves and surfaces, and line and flux integrals. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** A multiple choice pop quiz was given during class time. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students should be able to answer this correctly.		
	Assessment Method: Multiple-choice problem requiring students to compute the value of a double integral **Assessment Method Type:** Exam - Standardized **Target for Success:** 70% or more of students can answer the problem correctly.		
	Assessment Method: Written answer to question prompt on an exam. **Assessment Method Type:** Exam - Standardized	04/05/2015 - Over 70% of both sections correctly answered the question. **Result:** Target Met **Year This Assessment Occurred:**	04/05/2015 - No action plan was created since the target was met.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Target for Success: 70% or more of students are able to answer the prompt correctly, with minimal error on the part of students.	2014-2015 **Resource Request:** None **GE/IL-SLO Reflection:** This question addressed the computation and critical thinking components of the IL-SLO.	
	Assessment Method: On the final exam of the 2014 Spring Quarter, students had a mass/volume problem that required either a triple integral or a double integral. **Assessment Method Type:** Exam - Standardized **Target for Success:** Class average of 70%		
Department - Mathematics (MATH) - MATH 1D - CALCULUS - Divergence and Curl - A student will be able to demonstrate an understanding of the concepts of divergence and curl as well as key theorems related to these concepts (e.g., the Divergence Theorem and Stoke's theorem). (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** A multiple choice problem with answers supported by written explanation for choice of answer was given on the topic of Green's Theorem on a scheduled exam. **Assessment Method Type:** Exam - Standardized **Target for Success:** At least 70% of students can answer the question correctly and support with a coherent explanation for their choice.		
	Assessment Method: Multiple-choice problem from final exam requiring students to compute a line integral using Stoke's Theorem **Assessment Method Type:** Exam - Standardized **Target for Success:** 70% or more of students can answer this question correctly.		
	Assessment Method: Written response question testing student knowledge of the Divergence Theorem		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method Type: Exam - Standardized **Target for Success:** 70% of students are able to answer the question correctly.		
	Assessment Method: On the week 11 of the 2014 Spring Quarter, students had a 2D vector field with 5 sub-problems that asked conceptual questions including Green's Theorem. **Assessment Method Type:** Exam - Standardized **Target for Success:** Class average of 70%		
Department - Mathematics (MATH) - MATH 1D - CALCULUS - Concepts and Connections - Students will develop conceptual understanding of Integration involving functions of multiple variables and theorems and concepts related to vector calculus. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 1D - CALCULUS - Mechanical Fluencies - Students will demonstrate the ability to evaluate multiple integrals, and line and flux integrals. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Active			
Department - Mathematics (MATH) - MATH 1D - CALCULUS - Applications - Students will solve problems involving applications of multiple integrals and vector calculus. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 217 - INTEGRATED STATISTICS I - Experimental Design - Successful students will be able to assess the design of a study or experiment to determine which conclusions or generalizations would be appropriate. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Problem #6 from the Carnegie Mid-Course assessment package. See related document. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of student should get the correct answer. **Related Documents:** Math217Problem6.JPG		
	Assessment Method: #8 on the Carnegie Foundation Common, MidCourse Exam #8 was about random assignment **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% correct		
	Assessment Method: Module 1 Exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Mean score 70% or better	10/09/2015 - mean score of 82% The students greatly benefit from having all the printouts of the workbook on Day 1. Success in this SLO is dependent on being ready to learn on day one. **Result:**	10/09/2015 - Target was met, but continued funding will be necessary with future cohorts.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Continued use of Basic Skills/Equity money for copying the in class workbook **GE/IL-SLO Reflection:** Students are asked to analyze the design of experiments, sampling and observational studies. Clear communication and critical thinking are essential.	
Department - Mathematics (MATH) - MATH 217 - INTEGRATED STATISTICS I - Data Analysis and Displays - Successful students will be able to analyze, summarize and interpret data, making appropriate choices regarding numerical summaries and graphical displays. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Problem #11 from the Carnegie Mid-Course assessment **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the student will get it correct. **Related Documents:** Math217Problem11.JPG		
	Assessment Method: #12 on the Carnegie Foundation midcourse exam #12 was about choosing the most appropriate display **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% correct		
	Assessment Method: Module 2 Exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% C or better		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Mathematics (MATH) - MATH 217 - INTEGRATED STATISTICS I - Using Models to Make Predictions - Successful students will be able to interpret the parameters of both linear and exponential models and use these models to make predictions. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Problem #24 from the Carnegie Mid-Course assessment **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of student get it correct **Related Documents:** Math217Problem24.JPG		
	Assessment Method: #18 on the Carnegie Foundation Common, MidCourse Exam #18 -interpret the slope of an LSR **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% correct		
	Assessment Method: Module 3 and 4 exams **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** mean score of 70% C or better		
Department - Mathematics (MATH) - MATH 217 - INTEGRATED STATISTICS I - Probability - Successful students will be able to determine the likelihood of events. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 12/14/2012 **Course-Level SLO Status:** Inactive	**Assessment Method:** #38 on the Carnegie Foundation Common, MidCourse Exam #38 was about long run behavior **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% correct		
	Assessment Method: Module 5 Exam **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** mean score of 70% or better		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Mathematics (MATH) - MATH 217 - INTEGRATED STATISTICS I - Concepts and Connections - Students will develop conceptual understanding of populations, samples, and sampling distributions. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 217 - INTEGRATED STATISTICS I - Mechanical Fluencies - Students will demonstrate the ability to calculate probabilities, descriptive statistics, and z-scores. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 217 - INTEGRATED STATISTICS I - Applications - Students will investigate the center, shape, and spread of distributions from many relevant contexts. (Created By Department - Mathematics (MATH))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 22 - DISCRETE MATHEMATICS - Relations - Identify salient properties of relations (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/28/2013 **Course-Level SLO Status:** Inactive	**Assessment Method:** Count the number of correct responses **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of the students will answer the question correctly		
Department - Mathematics (MATH) - MATH 22 - DISCRETE MATHEMATICS - Logic and Proofs - Use formal logic and various methods of arguments to formally write proofs involving number theory, set theory, combinatorics, and discrete probability. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** On the final exam, students are to use formal logic to determine the validity of a series of given arguments. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 80% of the students will correctly apply formal logic to draw valid conclusions.	11/29/2015 - This course did not get its slos evaluated. That was because there was no full time faculty member running that show. Only part time faculty taught the course that year. **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Faculty support: with SLO's, mentoring, scheduling, and PD on assessment. **GE/IL-SLO Reflection:** Proofs require critical thinking and communication skills, and sometimes computation skills.	11/29/2015 - We have already begun a revamp of our SLO's and the whole SLO process. We'll see if those changes can focus our efforts in such a way that we don't overlook any of our classes.
Department - Mathematics (MATH) - MATH 22 - DISCRETE MATHEMATICS - Number Theory and Applications - Apply number theory, combinatorics, discrete probability,	**Assessment Method:** Students are given a written final exam. **Assessment Method Type:** Exam - Course Test/Quiz		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
graph theory, and recursion to solve various application problems. (Created By Department - Mathematics (MATH)) **Start Date:** 09/26/2011 **End Date:** 06/29/2012 **Course-Level SLO Status:** Inactive	**Target for Success:** 80% of the students will earn 75% or better questions related to this SLO **Assessment Method:** In class quiz **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students will answer the questions correcflty. **Assessment Method:** Extended problem investigation **Assessment Method Type:** Case Study/Analysis **Target for Success:** 80% satisfactory completion **Related Documents:** Mathematics of Gerrymandering		
Department - Mathematics (MATH) - MATH 22 - DISCRETE MATHEMATICS - Concepts and Connections - Students will develop conceptual understanding of formal logic and various methods of arguments that can be used as the basis of a computer program. They will demonstrate and communicate this understanding by writing proofs involving number theory, set theory, combinatorics, and discrete probability. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 22 - DISCRETE MATHEMATICS - Mechanical Fluencies - Students will develop fluency in deciphering and using the			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
language of logic, proof, and set theory, constructing logical arguments and proofs that can then be used as the basis of a computer program. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 22 - DISCRETE MATHEMATICS - Applications - Students will apply number theory, combinatorics, discrete probability, graph theory, and recursion to solve various application problems. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 220 - ELEMENTARY ALGEBRA - Linear and Quadratic equations - Solve algebraically, graphically, and numerically linear equations, linear inequalities in one variable, linear systems of equations, and quadratic equations. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Multiple choice question on determining the correct solution set in interval notation to a linear inequality in one variable. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 75% of the students select the correct answer **Related Documents:** MATH 220 SLOs Spring 2012		
	Assessment Method: Solve for a specified variable giving an equation involving all variables. **Assessment Method Type:**		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Exam - Course Test/Quiz **Target for Success:** 75% of students will understand how to apply algebraic properties to isolate a variable. (75% of students will solve the equation correctly.)		
	Assessment Method: Solve a system of 2 linear equations in 2 variables using any algebraic method. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 75% of students will be able to solve the system with little or no error (scoring 75% or better on this problem).	07/06/2015 - 55% of students were able to solve the system with a score of 75% or better. Students seem to understand the main concept but have trouble working with fractions fluently. **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Get additional help such as embedded tutoring for the course.	07/06/2015 - Provide more practice for students in class. Include more fractions in problems for students to develop fluency.
	Assessment Method: Solve an inequality in one variable with no fractions involved. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 75% of students will be able to solve the inequality correctly.	07/06/2015 - 75% of students were able to solve the inequality correctly with little or no error. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015	07/06/2015 - Students can solve basic linear equations and inequalities but have difficulty working with fractions. Continue integrating fractions in problems throughout the quarter.
Department - Mathematics (MATH) - MATH 220 - ELEMENTARY ALGEBRA - Application - Model and solve application problems using linear equations, linear inequalities, and linear systems of equations. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Multiple choice problem in which the student must determine the correct linear model which reflects the description given in words. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 75% of the students select the correct answer **Related Documents:** MATH 220 SLOs Spring 2012		
	Assessment Method: Students are to accurately write a linear		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	equation to model a given real-world scenario. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students will write an accurate equation.		
Department - Mathematics (MATH) - MATH 220 - ELEMENTARY ALGEBRA - Polynomials and Exponents - Simplify polynomial expressions and exponential expressions with integer exponents. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Multiple choice problem in which the student must determine the correct answer to a problem involving simplifying an expression using the correct rules of exponents. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 75% of the students select the correct answer. **Related Documents:** MATH 220 SLOs Spring 2012		
	Assessment Method: Students are asked to simplify an algebraic expression by applying appropriate properties of exponents. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70%		
Department - Mathematics (MATH) - MATH 220 - ELEMENTARY ALGEBRA - Concepts and Connections - Students will develop conceptual understanding of the relationship between a linear function and its graph. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 220 - ELEMENTARY ALGEBRA - Mechanical Fluencies - Students will demonstrate the ability to solve linear equations and linear systems and graph linear equations of two variables. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 220 - ELEMENTARY ALGEBRA - Applications - Students will solve problems involving applications of linear growth. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 230 - PREPARING FOR ALGEBRA - Solve Linear Equation - Solve a linear equation (in one variable) containing rational coefficients and grouping symbols. (Created By Department - Mathematics (MATH))	**Assessment Method:** All students will take an exam requiring them to solve equations with fractional coefficients, decimal coefficients, and multiple grouping symbols. **Assessment Method Type:** Exam - Course Test/Quiz	06/30/2015 - All students who passed the class earned at least 84% on the exam. For equations with fractional coefficients, many students who cleared the equation of fractions first did not multiply every single term by the least common denominator. **Result:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Inactive	**Target for Success:** All students who pass the course will earn 84% or higher on the exam.	Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment is computational in nature.	
Department - Mathematics (MATH) - MATH 230 - PREPARING FOR ALGEBRA - Apply linear equations - Write a linear equation to represent a real world application, and interpret the solution in context. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Students will complete an exam including two or three word problems in which they must define variables or variable expressions, write an equation associated with the problem, and clearly state the conclusion in a sentence. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** All students who pass the course will earn 84% or higher on the exam.	06/30/2015 - Although many students needed to take the exam more than once, all students who passed the class earned at least 84% on the exam. Students had the most trouble translating the unknown quantities into algebraic expressions and setting up the equation needed to solve the problem. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment requires both computation and communication.	
Department - Mathematics (MATH) - MATH 230 - PREPARING FOR ALGEBRA - Proportions and percent - Apply knowledge of proportional reasoning and percent to real applications. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Two exams, one on proportional reasoning, one on percent applications. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** All students who pass the course will earn 84% or higher on each exam.	06/30/2015 - All students who passed the class earned at least 84% on the exams. For the exam on proportional reasoning, many students had difficulty converting from one set of units to another. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment requires computation, critical thinking, and communication skills.	
Department - Mathematics (MATH) - MATH 230 - PREPARING FOR ALGEBRA - Geometric Formulas - Apply geometric formulas to solve applications involving	**Assessment Method:** An exam requiring knowledge of formulas for perimeter and area of rectangles, triangles and circles. Students must also	06/30/2015 - All students who passed the class earned at least 84% on the exam. When asked to compute the perimeter of a semi-circle, many students did not add the diameter. Another	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
perimeter, area, and volume. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	calculate a volume given a formula. Students not reaching mastery will retake a different version of the exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** All students who pass the course will earn 84% or higher on the exam.	problem that many students had difficulty with was determining whether to use the perimeter or area formula, given a certain quantity with units. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment requires computation and critical thinking.	
Department - Mathematics (MATH) - MATH 230 - PREPARING FOR ALGEBRA - Concepts and Connections - Students will develop conceptual understanding of linear equations, ratios and proportions, percents, and geometric perimeters, areas, and volumes. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 230 - PREPARING FOR ALGEBRA - Mechanical Fluencies - Students will demonstrate the ability to solve linear equations, proportions, and percent problems and apply geometric formulas to compute perimeter, area, and volume. (Created By Department - Mathematics (MATH))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 230 - PREPARING FOR ALGEBRA - Applications - Students will apply their learning to application problems involving linear equations, ratios and proportions, percents, and geometric perimeters, areas, and volumes. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 230J - PREPARING FOR ALGEBRA - Proportions and Percent - Apply knowledge of proportional reasoning and percent to real applications. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Two exams, one on proportional reasoning and one on percent applications. Students not reaching mastery will retake a different version of the exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** All students who pass the course will earn 84% or higher on each exam.	07/01/2015 - All students passing the course earned 84% or higher on each exam. Of the 14 students who passed the course, 13 students took each exam at most twice in order to reach mastery. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment is computational.	
Department - Mathematics (MATH) - MATH 230J - PREPARING FOR ALGEBRA - Geometric Formulas - Apply geometric formulas to solve applications involving perimeter, area, and volume. (Created By Department - Mathematics (MATH))	**Assessment Method:** An exam requiring knowledge of formulas for perimeter and area of rectangles, triangles and circles. Students must also calculate a volume given a formula. Students not reaching mastery will retake a	07/01/2015 - All students passing the course earned 84% or higher on each exam. Most students took the exam at most three times in order to reach mastery. **Result:** Target Met	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Inactive	different version of the exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** All students who pass the course will earn 84% or higher on the exam.	**Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment is computational.	
Department - Mathematics (MATH) - MATH 235 - PREPARING FOR ALGEBRA: REAL NUMBERS - Order of Operations - Without a calculator, perform the order of operations to find the value of an expression involving whole numbers, fractions, decimals, and/or signed numbers. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** The students will complete 4 exams (whole numbers, fractions, decimals, signed numbers) involving these calculations. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** All students passing the class will earn 87% or higher on each exam.	06/30/2015 - All students who passed the class earned at least 87% on each exam. The most difficult topics for students seemed to be order of operations and adding signed numbers. For order of operations, a lot of students did not remember to add or subtract and multiply or divide from left to right. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment is computational.	
Department - Mathematics (MATH) - MATH 235 - PREPARING FOR ALGEBRA: REAL NUMBERS - Convert between number forms - Convert between whole numbers, fractions, mixed numbers, and decimals. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Students will complete a module B and module C exam requiring conversion between these number forms. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** All students passing the course will earn 87% or higher on both exams.	06/30/2015 - All students who passed the class earned at least 87% on each exam. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment is computational.	
Department - Mathematics (MATH) - MATH 235 - PREPARING FOR ALGEBRA: REAL NUMBERS - Apply operations with rational numbers - Apply operations with whole numbers, fractions, decimals, and mixed numbers to real world problems and interpret the answer in context. (Created By Department - Mathematics (MATH))	**Assessment Method:** Each exam (whole numbers, fractions, decimals, signed numbers) includes at least two problems requiring real world application of operations. **Assessment Method Type:** Exam - Course Test/Quiz	06/30/2015 - All students who passed the class earned at least 87% on each exam. For application problems involving multiplication and division of fractions, many students had trouble determining which operation to use. **Result:** Target Met	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Course-Level SLO Status:** Inactive	**Target for Success:** All students passing the exam and course will earn 87% or higher on the exams.	**Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment requires computation and communication skills.	
Department - Mathematics (MATH) - MATH 235 - PREPARING FOR ALGEBRA: REAL NUMBERS - Concepts and Connections - Students will develop conceptual understanding of whole numbers, fractions, decimals, and real numbers. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 235 - PREPARING FOR ALGEBRA: REAL NUMBERS - Mechanical Fluencies - Students will demonstrate the ability to add, subtract, multiply, and divide whole numbers, fractions, decimals, and real numbers. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Mathematics (MATH) - MATH 235 - PREPARING FOR ALGEBRA: REAL NUMBERS - Applications - Students will apply their learning to solve problems involving whole numbers, fractions, decimals, and real numbers. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 2A - DIFFERENTIAL EQUATIONS - Analytic Techniques - Solve differential equations with appropriate analytic techniques. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Instructor-generated prompt **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 80% of responses adequate or better		
Department - Mathematics (MATH) - MATH 2A - DIFFERENTIAL EQUATIONS - Numeric Techniques - Approximate solutions to differential equations with appropriate numeric techniques. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive			
Department - Mathematics (MATH) - MATH 2A - DIFFERENTIAL EQUATIONS - Differential Equations - Verify solutions to differential equations analytically, numerically, graphically, and qualitatively. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Extended problem investigation **Assessment Method Type:** Case Study/Analysis **Target for Success:** 80% successful completion **Related Documents:** Settling Time		
	Assessment Method: This SLO was assessed using one of the	07/30/2015 - There were three sessions of	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	problems on the second exam taken on Week 7. The problem is composed of 10 sub-problems. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 80% Success Rate	Math2A in the Spring Quarter of 2015. Each class started at 8:00 AM, 10 AM, and 6 PM, respectively. 77 out of the 81 students in all three sessions took the exam, and performed an average of 82% and a median of 88%. The performance details of each session are as follows: 8 AM (16 out of 16): Average 81%, Median 86% 10 AM (33 out of 33): Average 80%, Median 86% 6PM (28 out of 32): Average 86%, Median 95% For a second-order homogenous linear differential equation with an initial displacement and an initial velocity that describes a mass-spring system, most of the students understood the system, solved the initial value problem, predicted the behavior of the system, and came up with a sketch of the solution curve. With a lot of emphasis on qualitative analysis along with analytic practices of different types of mass-spring systems, 83% of them were able to solve the problem for a passing grade. There are notable gaps between the performances of different sessions. The evening session was the most engaging and enthusiastic class throughout the quarter. The atmosphere was relaxed but sincere in learning, and there were several students who were proactive in asking good questions. That positive environment might have affected the class performance, which was better than the other two sessions. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **GE/IL-SLO Reflection:** This assessment requires computation, communication, and critical thinking skills.	11/30/2015 - None. Target was met.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Mathematics (MATH) - MATH 2A - DIFFERENTIAL EQUATIONS - Concepts and Connections - Students will develop conceptual understanding of mathematical modeling of continuous processes and their rates of change. They will learn to demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 2A - DIFFERENTIAL EQUATIONS - Mechanical Fluencies - Students will demonstrate the ability to solve differential equations and verify their solutions analytically, numerically, graphically, and qualitatively. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 2A - DIFFERENTIAL EQUATIONS - Applications - Students will model continuous processes using differential equations and use the model to answer related questions. (Created By Department -			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 2B - LINEAR ALGEBRA - Vector Spaces - Students will be able to understand the concepts of a vector space and prove facts about them. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/22/2014 **End Date:** 06/26/2015 **Course-Level SLO Status:** Inactive	**Assessment Method:** Students are asked to prove why a given set with specified characteristics is a vector space. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students will receive at least 7 points on a 10-point rubric		
	Assessment Method: In the final exam, the students were given a vector space problem. Given a subset of R^3, they determined whether the set was a vector subspace or not. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** class average of 70%		
	Assessment Method: On the final exam of the Winter Quarter of 2014, the students had a subset of R^3 and determined whether the set was a vector space or not. Three more sub-problems were given for discussion about the vector space. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Class average of 70%		
	Assessment Method: Students were asked to properly prove facts about the dimension of the null space of a linear transformation. In particular, given the	04/02/2015 - 35 out of 60 students answered this assessment correctly. This is a success rate of approximately 58.3%. This is below our target for this question.	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	dimensions of a matrix and a description of the number of pivot columns, students were asked to properly identify the dimension of the null space of the transpose of the matrix. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Target success rate of 70% desired.	We believe that this is partially a result of the fact that this question demands a deep understanding of multiple concepts. In future quarters, a strategy to help better access student understanding will be to use a series of questions that start with a single fact about vector spaces. Then, build more complexity into these questions leaving the hardest question (as was asked here) for last. This will help build a more complete picture of student proficiency. **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Continued access to MATLAB Software **GE/IL-SLO Reflection:** This assessment required critical thinking and computation. In this assessment, we asked students to analyze the properties of a linear map defined by a single matrix. In particular, we gave students partial information about a matrix and asked them to make connections between the information given and properties of a related mapping. To solve this problem, students had to combine theoretic knowledge of the 4 fundamental subspaces in linear algebra with a calculation. By asking students to make connections between linear maps and the four fundamental subspaces, we targeted analytical thinking, problem solving skills and the use of numerical data.	
Department - Mathematics (MATH) - MATH 2B - LINEAR ALGEBRA - Modeling - Students will be able to use a linear system to model a problem. They will use techniques learned in class to solve the	**Assessment Method:** Students are given two modeling problems to solve and interpret. **Assessment Method Type:** Exam - Course Test/Quiz		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
system, and interpret the result. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Target for Success:** 80% of students will receive 14 points or higher on a 20 point rubric.		
	Assessment Method: In the final exam, the students were asked to model a real-life scenario using a linear system, and solve it. Then, they were asked to write a practical interpretation of the solution. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** class average of 70%		
	Assessment Method: At the end of the Winter Quarter of 2014, the students took the final exam where they had two application problems to model, had to solve the associated systems using learned techniques, and interpret the results. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Class average of 70% on both problems		
Department - Mathematics (MATH) - MATH 2B - LINEAR ALGEBRA - Concepts and Connections - Students will develop conceptual understanding of the four major problems in introductory linear algebra: the matrix-multiplication problem, the linear systems problem, the least-squares problem, and the eigenvalue/eigenvector problem. Students will demonstrate and communicate this understanding by reasoning with definitions and theorems and connecting concepts. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:**			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 2B - LINEAR ALGEBRA - Mechanical Fluencies - Students will solve each of the major problems (the matrix-multiplication problem, the linear systems problem, the least-squares problem, and the eigenvalue/eigenvector problem) using appropriate methods. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 2B - LINEAR ALGEBRA - Applications - Students will be able to create, interpret, analyze, and discuss mathematical models of physical problems using linear algebraic techniques. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 42 - MATH FOR ELEMENTARY EDUCATION - Pedagogy for Math - After instruction, the student will be able to design and develop pedagogical strategies to help elementary students learn arithmetic. (Created By Department - Mathematics (MATH))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 42 - MATH FOR ELEMENTARY EDUCATION - Affective Domain - After instruction, the student will be able to discuss the effects of math anxiety on the learning environment in an elementary classroom (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Quarter **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 42 - MATH FOR ELEMENTARY EDUCATION - Mathematical Structures - After instruction, the student will be able to describe the mathematical structure of the integers, the rational numbers, and the real numbers. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Quarter **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 42 - MATH FOR ELEMENTARY EDUCATION - Mathematical Operations - After instruction, the student will be able to identify and demonstrate important properties of arithmetic operations. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Quarter			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Active			
Department - Mathematics (MATH) - MATH 44 - MATH FOR THE LIBERAL ARTS - Problem Investigation - Investigate problems analytically, numerically, graphically, and verbally. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Development of a mathematical model appropriate for a given data set **Assessment Method Type:** Case Study/Analysis **Target for Success:** 80% of students should successfully complete the assessment **Related Documents:** Moon phase model prompt Data for moon phase prompt		
	Assessment Method: Develop and analyze a mathematical model from a qualitative description **Assessment Method Type:** Case Study/Analysis **Related Documents:** Malthusian Prosperity		
Department - Mathematics (MATH) - MATH 44 - MATH FOR THE LIBERAL ARTS - Mathematical model Output - Interpret the output of a mathematical model in qualitative context. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Proctored in-person exam or quiz. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70%	10/05/2015 - Two questions on the final exam were used to assess this SLO. 19 students took the final exam. One presented a mathematical model (quadratic) and required students to answer questions based on the mathematical model. 14 (74%) of the 19 students were able to do this successfully. Another question asked the student to develop a mathematical model (linear) and then use their model to answer a question. 11 (58%) of 19 students were able to do this successfully. The target was not met. I think this can be attributed to the recency of covering the material. Mathematical modeling was covered at the beginning of the quarter and was not fresh in the students minds when they took the final. **Result:** Target Not Met **Year This Assessment Occurred:**	11/30/2015 - Encourage students to review modeling.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		2014-2015	
Department - Mathematics (MATH) - MATH 44 - MATH FOR THE LIBERAL ARTS - Mathematical Outcome Justification - Justify the reasonableness of a mathematical outcome in qualitative context. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** writing prompt to be completed in class - pm **Assessment Method Type:** Exam - Course Test/Quiz		
Department - Mathematics (MATH) - MATH 44 - MATH FOR THE LIBERAL ARTS - Concepts and Connections - Students will develop conceptual understanding of Polya's problem-solving method. They will demonstrate this understanding by communicating/presenting their thinking on each of the four steps: Understanding, planning, acting, checking. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 44 - MATH FOR THE LIBERAL ARTS - Mechanical Fluencies - Students will investigate particular phenomena analytically, numerically, graphically, and verbally. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:**			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Active Department - Mathematics (MATH) - MATH 44 - MATH FOR THE LIBERAL ARTS - Applications - Students will apply Polya's problem-solving method to solve problems from a variety of qualitative contexts. They will select, construct, and use mathematical models, identifying salient features of particular phenomena and interpreting and justifying the reasonableness of their results. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48A - PRECALCULUS I - Function Analysis - A successful student will be able to graph, analyze and transform polynomial, power, and root functions. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** A multiple choice question was given to the students. This question provided a graph of the original function and its transformation. The students were to determine what the function of the transformed graph. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% correct		
	Assessment Method: Two multiple choice questions were placed on the final exam to assess these SLOs. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% correct on each problem		
	Assessment Method: multiple choice question **Assessment Method Type:** Exam - Course Test/Quiz		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Target for Success: 70% correct **Related Documents:** Questions		
Department - Mathematics (MATH) - MATH 48A - PRECALCULUS I - Modeling - A successful student will be able to model real-life phenomenon using polynomial, power & root functions, use the model to make predictions, and interpret solutions within the context of the real-life phenomenon (Created By Department - Mathematics (MATH)) **Start Date:** 10/13/2011 **Course-Level SLO Status:** Inactive	**Assessment Method:** Students were given a free-response question that contained 5 parts. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% for each of the 5 parts. **Related Documents:** M48A_SLOQuestions.doc		
	Assessment Method: One multiple choice question from the final exam was given to students to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 50% or higher success rate on assessment question		
	Assessment Method: multiple choice question **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% **Related Documents:** Questions	07/05/2015 - 68/113 students selected the correct answer to the problem. This equates to approximately 60.2% overall. This was the total from five sections of the course. Though the target was not met, two of the sections seemed to benefit from the trial of an in-class embedded tutor during the quarter. **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Continue funding with embedded tutors. **GE/IL-SLO Reflection:** This problem addresses critical and analytical thinking. Given a function which models a real world situation, students were	07/05/2015 - Continue the funding of embedded tutors in this course. This course has a historically bad success rate, and we are exploring ways of improving this. The quarter in which this SLO was implemented was the first quarter a couple of instructors attempted having embedded tutors in the classroom. There has also been discussion in previous quarters of reevaluating the cut-scores for this course. Perhaps there should be action to this idea, as well.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		asked to determine a certain interval of time in which something happened relevant to the model. This requires the understanding of applying the model and then solving an inequality, either through the use of a graphing calculator, or through analytical methods of solving. The answer obtained is not exact, then students must reason through the choices to determine which choice is the best estimate to the question asked. **Related Documents:** SLO Question 48A S15.pdf	
Department - Mathematics (MATH) - MATH 48A - PRECALCULUS I - Concepts and Connections - Students will develop conceptual understanding of linear, polynomial, power functions and their inverses. They will demonstrate and communicate this understanding by graphing, analyzing, and transforming these functions and connecting their multiple representations. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48A - PRECALCULUS I - Mechanical Fluencies - Students will demonstrate the ability to compute, interpret, and apply average rates of change of functions, including linear, polynomial, and power functions. (Created By Department - Mathematics (MATH))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48A - PRECALCULUS I - Applications - Students will model (by hand or using regression, as appropriate), solve, and interpret applications using linear, polynomial, and power functions. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48B - PRECALCULUS II - Modeling - A successful student will be able to model real-life phenomenon using rational, trigonometric, exponential and logarithmic functions, use the model to make predictions, and interpret solutions within the context of the real-life phenomenon. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** We will give students a multiple choice question that asks them to interpret an inverse function in the context of a real-life situation. **Assessment Method Type:** Exam - Standardized **Target for Success:** We hope that at least 70% of the students gets this problem correct. **Assessment Method:** We will give a question that contains multiple parts. Some of the parts are free-response while others are multiple choice. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** We expect an average score of 70% or higher.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method: Multiple Choice Question **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** 70% of students answer correctly	04/06/2015 - 58% of students answered the question correctly **Result:** Target Not Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Embedded tutors in the classrooms to facilitate a more active learning approach **Resource Request:** Embedded tutors in the classrooms to facilitate a more active learning approach **GE/IL-SLO Reflection:** The target was not met. It was a challenging question involving percent change and solving an exponential equation, but more students should have been able to answer the question correctly. In the future a more active learning approach may be beneficial for this class. Having embedded tutors in the classroom would facilitate this approach. **GE/IL-SLO Reflection:** The target was not met. It was a challenging question involving percent change and solving an exponential equation, but more students should have been able to answer the question correctly. In the future a more active learning approach may be beneficial for this class. Having embedded tutors in the classroom would facilitate this approach.	04/06/2015 - In the future a more active learning approach may be beneficial for this class. Having embedded tutors in the classroom would facilitate this approach.
Department - Mathematics (MATH) - MATH 48B - PRECALCULUS II - Function Analysis - A successful student will be able to graph, analyze and transform rational, exponential and logarithmic functions. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** The students will be given a multiple choice question regarding transformations of a trigonometric function. **Assessment Method Type:** Exam - Standardized **Target for Success:** We are hoping that at least 50% of the students gets this problem correct.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method: We will give a multiple part free-response question asking students to analyze the graph of a rational function. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** We expect the average score on this question to be 70% or higher.		
Department - Mathematics (MATH) - MATH 48B - PRECALCULUS II - Concepts and Connections - Students will develop conceptual understanding of rational, exponential, logarithmic, absolute value, composite, and piecewise-defined functions. They will demonstrate and communicate this understanding by graphing, analyzing, and transforming these functions and connecting their multiple representations. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48B - PRECALCULUS II - Mechanical Fluencies - Students will solve rational, exponential, and logarithmic equations. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Mathematics (MATH) - MATH 48B - PRECALCULUS II - Applications - Students will model, solve, and interpret applications using rational, exponential, logarithmic, absolute value, composite, and piecewise-defined functions. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48C - PRECALCULUS III - Modeling - A successful student will be able to model real-life phenomenon using linear, polynomial, trigonometric, exponential, logarithmic and rational functions, use the model to make predictions, and interpret solutions within the context of the real-life phenomenon. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** The students were asked to solve a problem containing multiple parts on the final exam. The format of the question was free-response and there were different point values assigned to each part of the question. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students would receive a score of at least 70% on the problem. **Related Documents:** M48C_SLOs.doc		
	Assessment Method: Students were given a multiple choice problem on the final exam addressing this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students answer the assessment correctly.	03/29/2015 - Over 70% of the students answered the question correctly. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** None **GE/IL-SLO Reflection:** The question satisfies our GE/IL-SLO competencies in computation and critical thinking.	03/29/2015 - The target was met so no action plan was created.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method: A multiple choice question on the final exam was used to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** AT least 70 % correct.		
	Assessment Method: A multiple part question will be given to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students should score at least 70% on this problem.		
Department - Mathematics (MATH) - MATH 48C - PRECALCULUS III - Vectors and Parametric equations - A successful student will be able to define, graph, and demonstrate appropriate applications of vectors and parametric equations. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** The students were asked to solve a problem containing multiple parts on the final exam. The format of the question was free-response and there were different point values assigned to each part of the question. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students would receive a score of at least 70% on the problem. **Related Documents:** M48C_SLOs.doc		
	Assessment Method: Students were given a multiple choice question on the final exam addressing this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students answered the assessment question correctly.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method: A multiple choice question was used to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70 % correct.		
	Assessment Method: The students will be given a multiple part question to assess this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students should score 70% or above.		
Department - Mathematics (MATH) - MATH 48C - PRECALCULUS III - Trigonometry - A successful student will be able to apply trigonometric functions, identities, and Laws of Sine and Cosine to solve applications problems. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** The students were given a multiple choice problem addressing this SLO on the final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of the students will answer this question correctly. **Related Documents:** M48C_SLOs.doc		
	Assessment Method: The students were given a multiple choice question on the final exam addressing this SLO. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** At least 70% of students answered this correctly.		
	Assessment Method: A multiple choice questions was used to assess this SLO.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
	Assessment Method Type: Exam - Course Test/Quiz **Target for Success:** At least 70 % correct.		
	Assessment Method: Students were given a question that contained multiple parts. **Assessment Method Type:** Exam - Course Test/Quiz **Target for Success:** Over 70% of students scoring 70% or above.		
Department - Mathematics (MATH) - MATH 48C - PRECALCULUS III - Concepts and Connections - Students will solve triangles, trigonometric equations, and problems with vectors. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48C - PRECALCULUS III - Mechanical Fluencies - Students will solve triangles, trigonometric equations, and problems with vectors. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 48C - PRECALCULUS III - Applications - Students will model, solve, and interpret			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
applications using trigonometric functions, parametric and polar curves, and vectors. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 54H - HONORS INSTITUTE SEMINAR IN MATHEMATICS - Using Appropriate sources of information - Analyze research questions posed by the instructor using appropriate sources of information. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Course-Level SLO Status:** Active	**Assessment Method:** The instructor will grade the students' research presentation based on a rubric to be included with the assessment findings. **Assessment Method Type:** Research Paper		
Department - Mathematics (MATH) - MATH 54H - HONORS INSTITUTE SEMINAR IN MATHEMATICS - Presenting answers - Present answers to the defined research questions orally or in writing using appropriate mathematical language (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Course-Level SLO Status:** Active	**Assessment Method:** The instructor will grade the students' research presentation based on a rubric to be included with the assessment findings. **Assessment Method Type:** Presentation/Performance		
Department - Mathematics (MATH) - MATH 57 - INTEGRATED STATISTICS II - Inferences - Successful students will be able to draw appropriate inferences from data in the presence of uncertainty. (Created By Department - Mathematics (MATH))	**Assessment Method:** All students were required to complete a culminating project (usually as part of a group) that required all of the following: formulation of research question, collection and analysis of data, and creation of a paper which documents all aspects of the study,		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 09/23/2013 **End Date:** 06/27/2014 **Course-Level SLO Status:** Inactive	including presentation of both the descriptive and inferential statistics as well as appropriate interpretations. **Assessment Method Type:** Class/Lab Project **Target for Success:** At least 80% of students will earn a grade of C or better on their project. (Although we would really like for 100% of the students to get a grade of C or better on this assignment, a goal of 80% is probably more realistic. **Related Documents:** Math 17 SLO reflections S2012.docx		
Department - Mathematics (MATH) - MATH 57 - INTEGRATED STATISTICS II - Using Models to Make Predictions - Successful students will be able to make predictions using linear and exponential models. (Created By Department - Mathematics (MATH)) **Course-Level SLO Status:** Inactive	**Assessment Method:** Multiple Choice Questions #14,20,31,32 from Carnegie "End of Course Assessment" were used to assess this SLO. **Assessment Method Type:** Exam - Standardized **Target for Success:** 70% of students will get at least 3 of these 4 problems correct.		
	Assessment Method: questions 6, 14, 20, and 31 on the carnegie summative common assessment exam. **Target for Success:** 70% correct on these questions		
Department - Mathematics (MATH) - MATH 57 - INTEGRATED STATISTICS II - Hypothesis Testing - Successful students will be able to carry out and critically assess all steps in a hypothesis test, from the design of the study and the collection of data to the production of a report which summarizes the data and the statistical findings. (Created By Department - Mathematics (MATH))	**Assessment Method:** All students were required to complete a culminating project (usually as part of a group) that required all of the following: formulation of research question, collection and analysis of data, and creation of a paper which documents all aspects of the study, including presentation of both the descriptive and inferential statistics as well as appropriate interpretations.	10/09/2015 - 23/25 = .92 92% of students earned a C or better on their project. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** none **GE/IL-SLO Reflection:**	10/09/2015 - none

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Inactive	**Assessment Method Type:** Class/Lab Project **Target for Success:** At least 80% of students will earn a grade of C or better on their project.	In order to put together the project, students need to collect data and compute the necessary elements of a hypothesis test, analyze the results and communicate them to the class.	
Department - Mathematics (MATH) - MATH 57 - INTEGRATED STATISTICS II - Concepts and Connections - Students will develop conceptual understanding of descriptive and inferential statistics. They will demonstrate and communicate this understanding in a variety of ways, such as: reasoning with definitions and theorems, connecting concepts, and connecting multiple representations, as appropriate. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			
Department - Mathematics (MATH) - MATH 57 - INTEGRATED STATISTICS II - Mechanical Fluencies - Students will demonstrate the ability to compute descriptive statistics, calculate confidence intervals, and carry out tests of hypotheses. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Mathematics (MATH) - MATH 57 - INTEGRATED STATISTICS II - Applications - Students will formulate conclusions about a population based on analysis of sample data. (Created By Department - Mathematics (MATH)) **Assessment Cycles:** End of Academic Year **Start Date:** 12/14/2015 **Course-Level SLO Status:** Active			

Unit Assessment Report - Four Column

Foothill College

Program (PSME - MATH) - Mathematics AS

PL-SLOs	Means of Assessment & Target / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Program (PSME - MATH) - Mathematics AS - 1 - Students completing their math program at Foothill College will be able to clearly communicate mathematical ideas through graphs, tables of data, equations, and verbal descriptions. **SLO Status:** Active	**Assessment Method:** Instructor-generated research assignment will be given in one of the Math 2A classes during the winter quarter of 2012. The assignment will be graded using a qualitative rubric. **Assessment Method Type:** Research Paper **Target:** 70% of the students will earn a "C" grade or better on the assignment. **Related Documents:** AS math P-SLO assessment prompt		
	Assessment Method: Comprehensive final exam given to students at the end of the course in the fall 2012 quarter **Assessment Method Type:** Exam - Standardized **Target:** 70% of the students will earn a "C" grade or better on the exam.		
	Assessment Method: At the end of the Winter Quarter in 2014, a problem with four questions was given part of the comprehensive Math2B final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target:** 70% of the students will earn a "C" grade or better on the problem.		
Program (PSME - MATH) - Mathematics AS - 2 - Students completing their math program at Foothill College will be able to construct appropriate mathematical models	**Assessment Method:** Common assessments given at the end of all terminal classes. These questions will be		

PL-SLOs	Means of Assessment & Target / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
of natural phenomena, develop those models with appropriate mathematical techniques, and interpret results of those models **SLO Status:** Active	given to all sections of the course. **Assessment Method Type:** Departmental Questions **Target:** 70% Success.		
	Assessment Method: A subset of four problems tested on the final exam, which together require students construct a model of natural phenomena and then use the model to answer questions and interpret results will be used to assess this PL-SLO. **Assessment Method Type:** Exam - Standardized **Target:** An average score of 70% or higher on the 4-problem assessment		
	Assessment Method: At the end of the Winter Quarter in 2014, an application problem with five questions was given as part of the comprehensive Math2B final exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target:** 70% of the students will earn a "C" grade or better on the exam.		
	Assessment Method: In 2014/2015, we evaluated this SLO in Math 2B, one of our 3 Capstone Courses (1D/2A/2B). This assessment consists of a two-part problem from the second exam. **Assessment Method Type:** Exam - Course Test/Quiz **Target:** 70% Success Rate **Related Documents:** M2B_W15_Exam_2_PLO_Question(2).pdf	11/30/2015 - Approximately 70% of the students in this PLO assessment demonstrated the capacity to create, analyze and interpret a mathematical model to describe collected scientific data describing the temperature on a specific day in Washington DC. In this instance, students in our capstone Math 2B course demonstrated the type of mathematical reasoning skills we aim to foster in our Foothill Math Program. However, we are careful not to draw broad conclusions from a single course or a single assessment type. We are working to create more opportunities for mathematical modeling in our	12/02/2015 - We are working to create more opportunities for mathematical modeling in our program by re-writing our course level SLOs. We hope that this process and the conversations it inspires will enhance students' familiarity with and use of the mathematical modeling process."

PL-SLOs	Means of Assessment & Target / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		program by re-writing our course level SLOs. We hope that this process and the conversations it inspires will enhance students' familiarity with and use of the mathematical modeling process. **Result:** Target Met **Year This Assessment Occurred:** 2014-2015 **Resource Request:** Faculty support: with SLO's, mentoring, scheduling, and PD on assessment. **GE/IL-SLO Reflection:** This assessment required computation, communication, and critical thinking.	