I. Service Area Name  Math, Science and Engineering (MSE)

II. Date of Review  May 15, 2014

III. Service Area Mission Statement (optional)

IV. Service Area’s key duties, responsibilities, functions, activities, and tasks

The Area of Math, Science and Engineering has 3 key duties.
1. Provide lower division preparation for transfer in Math, Science and Engineering
2. Confer Associate’s degrees in MSE
3. Offer key courses for General Education in the following areas
   - Natural Sciences/Language and Rationality (Hartnell),
   - Physical Universe and Its Life Forms (CSU Breadth)
   - Mathematical Concepts and Quantitative Reasoning/Physical and Biological Sciences (IGETC)

V. Greatest strengths and most significant accomplishments during the past three years

MSE has developed and maintained model STEM student support through grants and other efforts. The Science and Math Academies, STEM Summer Bridge programs, Internship Programs, and efforts in tutoring and Supplemental Instruction through MESA, MASH and other programs are exemplary.
MSE strives to bring relevant and innovative teaching practices to students, both in and out of the classroom. A variety of Directed Learning Aids (DLAs) have been developed in various disciplines to provide students with online resources for extra help with challenging STEM topics outside of the classroom. Math and Biology have been leaders in this project. Additionally MSE is leading the way in implementation of Top Hat Monocle- response system to engage students via their cell phones used in the classroom. Our part-time STEM counselor has been instrumental in the implementation of Early Support Program, a program designed to get students support as soon as an err from success is identified.

As discussed in last year’ summary, several of Science programs have seen growth over the last few years. As a response in Spring 2014, the Science Lab Tech hours have been restructured and expanded.

Student-Learning Outcome assessment is well under way in MSE. Of the 68 active courses/course groupings (i.e. MAT L-Series) 56 were assessed by Fall 2013. Ten are on schedule to be assessed during this term, Spring 2014. The remaining two courses are part of the Earth Science program. This program is in the process of being realigned to better serve student need by transformation into a Geology AS-T. These courses are being updated to align with the C-IDs and will be assess in 2014-15. All programs have assessed at least one of their Program Learning Outcomes.

As discussed in last year’s summary, many Basic Skills Math courses have been some of the first to fill at the college. The waitlist statistics for Fall of 2013 showed that two of the four courses with the most waitlists college-wide were MAT 121- Elementary Algebra and MAT 123- Intermediate Algebra (ENST Reports 8/15/13). A recent random sampling of 18 Math sections showed an average of 10 extra students over CBA cap. To address this issue, the Fall 2014 Math Schedule was expanded to try to fulfill the seat requirements, at a minimum, of the students taking extra seats in recent semesters. Concurrently a new model was used to address classroom storages. A set of classrooms was devoted to Math. This pushed section offerings throughout the day. Preliminary information about registration for Fall (ENST 5/7) indicates the late afternoon classes have poor registration in comparison to earlier sections. Evening enrollment trends are less clear.

MSE has worked to build a scheduling grid that coordinated the courses needed for STEM majors, with the goal to reduction in schedule conflicts for science and higher-level math courses. Ongoing efforts are being made to try to move this grid into a 16-week term.

MSE has a moderate Distance Education program, with one AST, 2 BIO, 1 GEG courses offered in science and 3 courses offered in Math online. The Math L-Series is a hybrid course.
AS-Ts have been developed for Math, Astronomy and Physics. The Geology AS-T is being written currently. Chemistry and Biology appear to be nearing the launch for their TMC. Melissa Hornstein has been attending ELC meetings to follow the progress of an Engineering transfer model, while Nancy Wheat has been doing the same for Environmental Science.

The Science and Engineering faculty and staff have participated in a great deal of planning to design effective teaching labs, instrument rooms, stockrooms, and storage areas for the new Science building. The groundbreaking for this building occurred in April 2014.

VI. Major challenges during the past three years—that is, the aspects that are most in need of improvement

With the loss of the Student Support Center, the Math program lost access to a broad-based structure for offering Math support through high-level Calculus. They have worked to address the short falls with programs like MASH, but the level of support provided to students has decreased. A permanent replacement for this loss is needed. The Math Discipline has proposed to establish a Math Learning Center that will address and meet students’ diverse learning needs in mathematics to promote student success in mathematics at all levels. This will be accomplished through direct one-on-one tutorial support, collaborative workshops, instructional technology tailored to different learning styles, multilingual support, and the support of faculty in directing their students to the Math Learning Center.

As we try to schedule higher numbers of math section to meet student need, we continue to struggle with finding qualified instructors. Over recent terms multiple Math classes have been taken off the schedule because they could not be staffed; for Spring 2014 this was 5-7 sections.

In the effort to bring IPADs into the MSE classrooms, there have been some problems with coordinating support and maintaining the flexibility of use. It is hoped that incorporating this program into this planning process will help facilitate smoother implementation.

The Math Faculty has been watching the trends in Basic Skills Math over the last few years. Many high school students are placing at a level that is lower or the same than the last math class they took. The Math Faculty want to work with the high schools to better articulate their curriculum with the material assessed in the placement test. Outreach programs are also being planned to increase interest in Math throughout the K-12 system.
VII. Brief summary of continuous quality improvement actions to be taken that will help to build upon strengths and address challenges.

MSE is working to offer Math classes at a level and on a schedule that meets student need. Staff and space will be needed to achieve this goal.

MSE strives to bring relevant and innovative teaching practices to students, both in and out of the classroom. This effort includes new technologies like IPADs and DLA, but an eye also needs to be kept on insuring the labs and classrooms remain current and well-supplied. Looking forward Science is working to prepare for the large scale moves that will come with bringing the new Science Building online.

Math is working to reinstate a Math Lab in a Student Support Center, while MSE as a whole strives to increase this to general STEM student support. This is likely a multi-year goal.