



ALAMO  
COLLEGES

PALO ALTO COLLEGE

### Program Assessment Report due 11/21/14

**Program or Certificate:** AS Mathematics Degree

**Academic Year Assessed:** 2013-2014

**Program Lead Faculty:** Patrick Lee

**Department Chair:** Patrick Lee

Program Learning Outcome #1	The student will determine whether a given definition or theorem applies to a given problem and/or situation and use this definition and theorem appropriately if they apply.
Courses in the degree plan that address this outcome	Math 2415, Calculus III (The capstone course for an Associate's Degree in Mathematics at Palo Alto College)
Assessment Method	Embedded questions on the final exams in Math 2415 (Calculus III). The scores on the relevant questions will be quantified for all students taking Calculus III. (The questions used for this learning outcome on the spring 2014 final are #12 and #14.)
Targets for Achievement	The students will master 60% of the assessment questions.
Results	<ul style="list-style-type: none"><li>• The students attained an 80% mastery on question #12</li><li>• The students attained a 92% mastery on question #14</li></ul> <p>Overall, on questions 12 and 14, the students attained a mastery level of 86%%</p>
Target Met or Not Met	Target Met
New action plan for improvement of student learning	The Mathematics department will continue to improve upon its test item blue prints for the Math 2415 final exam along with the detailed rubrics for the questions on the exam.
Evaluation of previous cycle's action plans	The students exceeded our target mastery level by 26 percentage points. The Mathematics faculty will be informed of this result and faculty teaching STEM math course (Math 1414, College Algebra (Precalculus Track), through Math 2415, Calculus III) will work together to continue to improve the teaching of this student learning outcome.



**Program Assessment Report due 11/21/14**

Program Learning Outcome #2	Students will use and interpret the language, notation, and applications of differential and Integral Calculus correctly and apply appropriate style and format on written work and exams.
Courses in the degree plan that address this outcome	Math 2415, Calculus III (The capstone course for an Associate's Degree in Mathematics at Palo Alto College)
Assessment Method	Embedded questions on the final exams in Math 2415 (Calculus III). The scores on the relevant questions will be quantified for all students taking Calculus III. (The questions used for this learning outcome on the spring 2014 final are #5, #6, and #7.)
Targets for Achievement	The student will master 60% of the assessment questions.
Results	<ul style="list-style-type: none"><li>• The students attained a 90% mastery on question #5</li><li>• The students attained a 97% mastery on question #6</li><li>• The students attained a 86% mastery on question #7</li></ul> <p>Overall, on questions 5, 6, and 7, the students attained a mastery level of 91%</p>
Target Met or Not Met	Target Met
New action plan for improvement of student learning	The Mathematics department will continue to improve upon its test item blue prints for the Math 2415 final exam along with the detailed rubrics for the questions on the exam.
Evaluation of previous cycle's action plans	The students exceeded our target mastery level by 31 percentage points. The Mathematics faculty will be informed of this result and faculty teaching STEM math course (Math 1414, College Algebra (Precalculus Track), through Math 2415, Calculus III) will work together to continue to improve the teaching of this student learning outcome.
Program Learning Outcome #3	The student will demonstrate the ability to visualize (through the use of pencil-to-paper interpretation or computer software) appropriate concepts and applications.



**Program Assessment Report due 11/21/14**

Courses in the degree plan that address this outcome	Math 2415, Calculus III (The capstone course for an Associate's Degree in Mathematics at Palo Alto College)
Assessment Method	Embedded questions on the final exams in Math 2415 (Calculus III). The scores on the relevant questions will be quantified for all students taking Calculus III. (The questions used for this learning outcome on the spring 2010 final are #1, #7, #8, and #9.)
Targets for Achievement	The student will master 60% of the assessment questions.
Results	<ul style="list-style-type: none"><li>• The students attained a 75% mastery on question #1</li><li>• The students attained a 86% mastery on question #7</li><li>• The students attained a 88% mastery on question #8</li><li>• The students attained a 66% mastery on question #9</li></ul> <p>Overall, on questions 1, 7, 8 and 9, the students attained a mastery level of 79%</p>
Target Met or Not Met	Target Met
New action plan for improvement of student learning	The Mathematics department will continue to improve upon its test item blue prints for the Math 2415 final exam along with the detailed rubrics for the questions on the exam.
Evaluation of previous cycle's action plans	The students exceeded our target mastery level by 19 percentage points. The Mathematics faculty will be informed of this result and faculty teaching STEM math course (Math 1414, College Algebra (Precalculus Track), through Math 2415, Calculus III) will work together to continue to improve the teaching of this student learning outcome.
Program Learning Outcome #4	The student will demonstrate good problem-solving techniques which will include, but not be limited to: <ul style="list-style-type: none"><li>a. The use of a variety of approaches to solve a given problem.</li><li>b. The selection of appropriate problem solving techniques.</li><li>c. Correctly interpreting results and solutions.</li></ul>



**Program Assessment Report due 11/21/14**

Courses in the degree plan that address this outcome	Math 2415, Calculus III (The capstone course for an Associate's Degree in Mathematics at Palo Alto College)
Assessment Method	Embedded questions on the final exams in Math 2415 (Calculus III). The scores on the relevant questions will be quantified for all students taking Calculus III. (The questions used for this learning outcome on the spring 2010 final are #10, #11, #12 and #13.)
Targets for Achievement	The students will master 60% of the assessment questions.
Results	<ul style="list-style-type: none"><li>• The students attained an 83% mastery on question #10</li><li>• The students attained a 98% mastery on question #11</li><li>• The students attained a 80% mastery on question #12</li><li>• The students attained a 92% mastery on question #13</li></ul> <p>Overall, on questions 10, 11, 12, and 13, the students attained a mastery level of 88%</p>
Target Met or Not Met	Target Met
New action plan for improvement of student learning	The Mathematics department will continue to improve upon its test item blue prints for the Math 2415 final exam along with the detailed rubrics for the questions on the exam.
Evaluation of previous cycle's action plans	The students exceeded our target mastery level by 28 percentage points. The Mathematics faculty will be informed of this result and faculty teaching STEM math course (Math 1414, College Algebra (Precalculus Track), through Math 2415, Calculus III) will work together to continue to improve the teaching of this student learning outcome.
Program Learning Outcome #5	The student will demonstrate the proper use of technology (particularly the graphing calculator) both effectively and appropriately.
Courses in the degree plan that address this outcome	Math 2415, Calculus III (The capstone course for an Associate's Degree in Mathematics at Palo Alto College)



**Program Assessment Report due 11/21/14**

Assessment Method	Embedded questions on the final exams in Math 2415 (Calculus III). The scores on the relevant questions will be quantified for all students taking Calculus III. (The questions used for this learning outcome on the spring 2010 final are #1, #4, #7, and #8.)
Targets for Achievement	The students will master 60% of the assessment questions.
Results	<ul style="list-style-type: none"><li>• The students attained a 75% mastery on question #1</li><li>• The students attained a 78% mastery on question #4</li><li>• The students attained a 86% mastery on question #7</li><li>• The students attained a 88% mastery on question #8</li></ul> <p>Overall, on questions 1, 4, 7, and 8, the students attained a mastery level of 82%</p>
Target Met or Not Met	Target Met
New action plan for improvement of student learning	The Mathematics department will continue to improve upon its test item blue prints for the Math 2415 final exam along with the detailed rubrics for the questions on the exam.
Evaluation of previous cycle's action plans	The students exceeded our target mastery level by 22 percentage points. The Mathematics faculty will be informed of this result and faculty teaching STEM math course (Math 1414, College Algebra (Precalculus Track), through Math 2415, Calculus III) will work together to continue to improve the teaching of this student learning outcome.