Los Medanos College Program-level Student Learning Outcomes

Developmental Math Program

Students completing the Developmental Math Program will demonstrate:

1. **Problem-solving abilities:** Students will use mathematical reasoning to solve problems and a generalized problem solving process to work word problems.
   a. The student can apply standard problem-solving methods and use relevant concepts to solve problems.
   b. The student uses a generalized problem-solving rubric if such a rubric is used in the class.
   c. The student’s written work demonstrates a conceptual understanding of course concepts.
   d. The student’s written work supports his/her solution.
   e. The student evaluates the reasonableness of his/her answer.

2. **Mathematical versatility:** Students will use verbal, graphical, numerical, and symbolic representations of mathematical ideas to solve problems.
   a. Students will use a variety of representations to demonstrate their understanding of mathematical concepts.
   b. Students will use a multi-prong approach to problem solving.
   c. Students will use appropriate technology to solve mathematical problems and judge the reasonableness of their results.

3. **Communication skills:** Students will read, write, listen to, and speak mathematics with understanding.
   a. Students will read and listen to mathematical presentations and arguments with understanding.
   b. Students will communicate both in speaking and in writing their understanding of mathematical ideas and procedures using appropriate mathematical vocabulary and notation.
   c. Students will coherently communicate their own mathematical thinking to others.

4. **Preparation:** Students will recognize and apply math concepts in a variety of relevant settings and demonstrate the math skills and knowledge necessary to succeed in subsequent courses.

5. **Effective Learning Attributes:** Students will demonstrate the characteristics of an effective learner.

   a. Student has the will to succeed and demonstrates the characteristics of a successful student: motivation, responsibility, focus, perseverance, the ability to cope with anxiety, a good attitude toward learning, and time management skills.
   b. Student has the skills to succeed. (S)he uses appropriate resources to improve learning and reach goals.
   c. Student self-monitors and self-regulates. (S)he assesses personal strengths and weaknesses in his/her learning process and then seeks and implements a strategy for improving learning.
Transfer Math Program

Students completing transfer-level math courses at LMC will demonstrate:

1. **Preparation and Mathematical Maturity:** Be prepared for the mathematical reasoning required in upper division work in their major, including the ability to generalize mathematical concepts and comprehend increasing levels of mathematical abstraction.

2. **Mathematical Literacy:**
   - Communicate using mathematics:
     a. Read with comprehension documents having mathematical content and participate cogently in discussions involving mathematics;
     b. Clearly articulate mathematical information accurately and effectively, using a form, structure and style that suit the purpose (including written and face-to-face presentation).

3. **Problem-solving ability:**
   a. Reason with and apply mathematical concepts, principles and methods to solve problems or analyze scenarios in real-world contexts relevant to their major;
   b. Use technology effectively to analyze situations and solve problems;
   c. Estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results.

4. **Modeling ability:**
   a. Construct and interpret mathematical models using numerical, graphical, symbolic and verbal representations with the help of technology where appropriate in order to draw conclusions or make predictions;
   b. Recognize and describe the limits of mathematical and statistical methods.

5. **Effective Learning skills:**
   a. Independently acquire further mathematical knowledge without guidance, take responsibility for their own learning, and function effectively in different learning environments.
   b. Succeed in different learning environments, particularly in a group setting of working collaboratively with others.