

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.