Rock Valley College

Developmental Mathematics

Contact Information

- Kathleen Almy
  Rock Valley College, Rockford, IL
  Associate Professor of Mathematics

- Email: k.almy@rockvalleycollege.edu

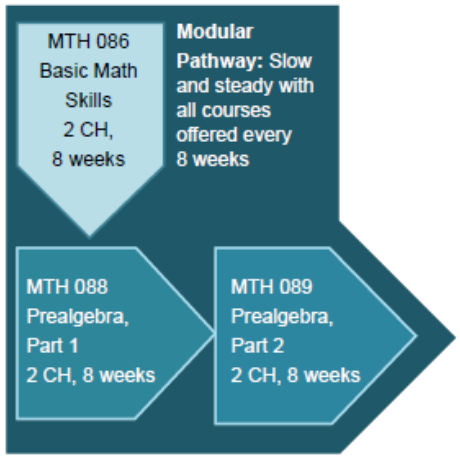
- Blog: http://almydoesmath.blogspot.com
  - Contains program manual and many other documents
  - Provides detailed information about the MLCS course and its materials

	Quality	Consistency	Flexibility	Affordability
Placement	Cut scores and routing methods are regularly validated. Accelerated courses require higher placement scores. Minimum competency required to start lowest course.	Mandatory testing and placement for all students scoring 17 or less on the ACT.	Students may retest once before starting the sequence and again later with a B or better in a math class. Two retests maximum.	Retests are $5. They allow students to skip courses, if merited, saving time and money. MyMathTest is used for placement test prep.
Advising	Accurate information is provided to all students in a variety of ways to ensure understanding of the program, its options, and student resources.	All entering students receive program information in orientation. All DM students receive regular in-course advising.	Students are made aware of various options and paths best suited for specific needs and learning styles.	Timely information reduces time needed to get to college level courses.
Courses	8 week modules reduce overlap of content with a gradual development and increased time on new topics to encourage mastery. Review is done in MML. Accelerated pathways exist for STEM and non-STEM majors.	Common final exam for each course. Common MML capstone assignments for each part 2 module. Combined algebra course has same book & content as beginning & intermediate algebra modules.	Every module is offered every 8 weeks. Qualifying students can take an accelerated algebra course to bypass 4 modules. 3 options exist to satisfy geometry requirement. Students can move between pathways.	Most students pass modules on their first attempt saving students tuition and time. Repeating a course costs less since students only repeat the modules needed.
Instruction	Slower pacing includes mid-chapter, unit test, and final exam review. Spiral learning on homework and tests. Each course begins with review in MML of previous module. MLCS and geometry are activity based.	Common syllabi, course policies, MML courses, MML homework, pacing, and grading standards exist for all courses. Attendance and MML homework are required. Minimum of 3 MML deadlines per week.	Majority of courses are offered day and night. Many courses offered computer-assisted or online as alternatives to lecture- based, face-to-face courses.	MML access code is required and includes e-book. Tier 1 modules use same book. Tier 2 modules use same book. Custom 3-hole punched book bundles reduce costs.
Support	Faculty and peer tutoring available. Sessions offered in RVC Math Lab on calculators and final exam prep. Individualized remediation program available to students who lack minimum skills to start DM program.	All students have access to assistance through MML help aids. The RVC Math Lab offers drop-in faculty tutoring and resources for all DM students.	Help is available online, in-person, by appointment, or on a drop-in basis. Students can get help from their instructor or another instructor in the RVC Math Lab. Pearson phone tutoring is available for all students in program.	Online help is included with MML access code. All other support services offered are free. The RVC Math Lab offers computers for online homework.

Abbreviations: DM = Developmental math MML = MyMathLab

Rock Valley College Developmental Math Flowchart

Your initial math course at RVC is determined by your score on the RVC Placement Test or ACT.



1. Accelerated Pathway: Liberal arts majors

MTH 096A is a course based in real life applications. Passing it satisfies the geometry requirement.

MTH 096A
Mathematical Literacy for College Students
6 CH, 16 weeks

Students who change their major can take MTH 093 after MTH 096A.

2. Accelerated Pathway: Allied Health, Business, Education, Science, or Math majors

Entry requires a higher initial placement than MTH 091 or A's in both MTH 088 and MTH 089.

MTH 096S
Combined Beginning and Intermediate Algebra
6 CH, 16 weeks

MTH 096S is an intense course, covering MTH 091-094 in 1 semester.

3. Modular Pathway: All majors

Modules are slow and steady. All are offered every 8 weeks.

MTH 091 Beginning Algebra, Part 1 2 CH, 8 weeks
MTH 092 Beginning Algebra, Part 2 2 CH, 8 weeks
1 semester
MTH 093 Intermediate Algebra, Part 1 2 CH, 8 weeks
MTH 094 Intermediate Algebra, Part 2 2 CH, 8 weeks
1 semester

College Level

MTH 115
MTH 220

College Level

MTH 100
MTH 120
MTH 132
MTH 216
MTH 115
MTH 220

Opportunity to Jump Ahead in the Math Sequence: Earning an A or B in any developmental math class grants you another chance to take the placement test and possibly advance to a higher-level course. See the Testing Center, in the basement of the Student Center, for more information.

Geometry (MTH 097) is required for students placing into MTH 086, 088, 091, or 096S who have not passed geometry in high school. MTH 097 can be taken after MTH 092 or MTH 096S. It can be taken before, after, or with intermediate algebra.
A competency test is available to bypass MTH 097.

MTH 097
Geometry
3 CH, 16 weeks

Key:

CH = Credit hours

MTH 115: General Education Math
MTH 100: Technical Math
MTH 132: Precalculus
MTH 220: Statistics
MTH 120: College Algebra
MTH 216: Math for Elementary Teachers

For more information, go to www.rockvalleycollege.edu/math or contact the Math Department Office in JCSM-1015 (phone 815-921-3510).

Rock Valley College Developmental Math
SUCCESS by design
Quality • Consistency • Flexibility • Affordability

Mathematical Literacy for College Students (MLCS)

6 semester hours
Prerequisite: Appropriate placement or prealgebra with a grade of "C" or better

---

One goal of developmental mathematics education is to provide students with the necessary skills and understanding required to be successful in college level mathematics. Mathematical Literacy for College Students (MLCS) is a new course being developed at the national level by AMATYC's New Life for Developmental Mathematics. Its origins are related to Quantway, funded by the Carnegie Foundation.

MLCS is an alternative path to certain college level math courses or further algebra. It integrates numeracy, proportional reasoning, algebraic reasoning, and functions with statistics and geometry as recurring course themes. Throughout the course, college success components are integrated with the mathematical topics. The course focuses on developing mathematical maturity through problem solving, critical thinking, writing, and communication of mathematics. Content is developed in an integrated fashion, increasing in depth as the course progresses. Upon completion of the course, students will be prepared for a statistics course or a general education mathematics course. Students may also take traditional intermediate algebra upon completion if they choose to pursue STEM courses.

MLCS provides an alternative to beginning algebra, creating multiple pathways for the developmental students. However, it is more difficult than beginning algebra to ensure students are prepared for a college level math course upon successful completion. It allows students to potentially complete their developmental math and college level math requirement for an Associate in Arts degree in one year total (one semester each), working toward the goal of improving college completion rates. It promotes 21st century skills to prepare students for both the workplace and future coursework. Further, it does not diminish requirements for non-STEM college level math courses but instead creates appropriate paths to these courses with the same level of intensity and complexity as the current path through intermediate algebra. The course has college level expectations and coursework but with a pace and instructional design intended for the adult, developmental learner. This strategy emulates the approach taken by the Common Core Standards and aligns with them as well.

MLCS Course Description and Objectives

Mathematical Literacy for College Students is a one semester course for non-math and non-science majors integrating numeracy, proportional reasoning, algebraic reasoning, and functions. Students will develop conceptual and procedural tools that support the use of key mathematical concepts in a variety of contexts. Throughout the course, college success content will be integrated with mathematical topics.

Prerequisite: Appropriate placement or prealgebra with a grade of "C" or better

COURSE OUTCOMES

1. Apply the concepts of numeracy in multiple contexts.
2. Recognize proportional relationships and use proportional reasoning to solve problems.
3. Use the language of algebra to write relationships involving variables, interpret those relationships, and solve problems.
4. Interpret and move flexibly between multiple formats including graphs, tables, equations, and words.
5. Demonstrate student success skills including perseverance, time management, and appropriate use of resources.
6. Develop the ability to think critically and solve problems in a variety of contexts using the tools of mathematics including technology.

COURSE OBJECTIVES

Upon successful completion of this course, the student will be able to:

Numeracy

1. Demonstrate operation sense and the effects of common operations on numbers in words and symbols.
2. Demonstrate competency in the use of magnitude in the contexts of place values, fractions, and numbers written in scientific notation.
3. Use estimation skills.
4. Apply quantitative reasoning to solve problems involving quantities or rates.
5. Demonstrate measurement sense.
6. Demonstrate an understanding of the mathematical properties and uses of different types of mathematical summaries of data.
7. Read, interpret, and make decisions based upon data from line graphs, bar graphs, and charts.

Proportional reasoning

8. Recognize proportional relationships from verbal and numeric representations.
9. Compare proportional relationships represented in different ways.
10. Apply quantitative reasoning strategies to solve real-world problems with proportional relationships.

Algebraic reasoning

11. Understand various uses of variables to represent quantities or attributes.
12. Describe the effect that changes in variable values have in an algebraic relationship.
13. Construct and solve equations or inequalities to represent relationships involving one or more unknown or variable quantities to solve problems.

Functions

14. Translate problems from a variety of contexts into a mathematical representation and vice versa.
15. Describe the behavior of common types of functions using words, algebraic symbols, graphs, and tables.
16. Identify the reasonableness of a linear model for given data and consider alternative models.
17. Identify important characteristics of functions in various representations.
18. Use appropriate terms and units to describe rate of change.
19. Understand that abstract mathematical models used to characterize real-world scenarios or physical relationships are not always exact and may be subject to error from many sources.

Student success

20. Develop written and verbal skills in relation to course content.
21. Evaluate personal learning style, strengths, weaknesses, and success strategies that address each.
22. Research using print and online resources.
23. Apply time management and goal setting techniques.

Mathematical success

24. Develop the ability to use mathematical skills in diverse scenarios and contexts.
25. Use technology appropriately including calculators and computers.
26. Demonstrate critical thinking by analyzing ideas, patterns, and principles.
27. Demonstrate flexibility with mathematics through various contexts, modes of technology, and presentations of information (tables, graphs, words, equations).
28. Demonstrate and explain skills needed in studying for and taking tests.

Kathleen Almy
Rock Valley College

Overall	Where do we start?
1.	Find a faculty advocate and form a task force of faculty, administrators, and student service personnel
2.	Get current pass rates and other program statistics to use as a baseline
3.	Read research on developmental students and math redesigns

Placement	Who is in your class?
1.	Learn how your placement system works including routing methods through the tests
2.	Get data to assess your cut scores and routing methods
3.	Meet as a department and evaluate placement policies with testing center personnel
4.	Institute mandatory testing and placement
5.	Consider refresher/placement prep methods such as MyMathTest

Advising	Are your students getting the information they need when they need it?
1.	Advertise program information in key offices, online, through classes, and in new student orientation
2.	Don't rely on advisors alone
3.	Assess your online registration system
4.	Ensure students enrolled in special formats (online, hybrid, etc.) know what they're getting

Courses	Do your classes serve your students?
1.	Consider options beyond the traditional lecture model (hybrid, online) as well as non-STEM alternatives
2.	Reduce level of complexity in certain topics (factoring, radicals, exponent rules)
3.	Increase problem solving, teamwork, boardwork, and talking about math
4.	*Slow down*….cover what really matters (which is not everything!) and give time to those topics
5.	Form a succinct list of objectives for every course that every instructor receives
6.	Consider combined books for cost savings and reducing overlap in courses

Instruction	What is going on in your developmental math classrooms?
1.	Form a task force of faculty to write standard policies, grading, & pacing that are acceptable to all
2.	Commit to using MyMathLab consistently in terms of usage, training, & support
3.	Investigate best practices for MyMathLab (required for all, regular deadlines, etc.)
4.	Consider departmental final exams to serve as a common assessment of courses, not faculty
5.	Develop standard syllabi for adjuncts
6.	Give adjuncts a list of expectations and evaluate their performance based on them
7.	Create a way instructors can share successes and strategies from their classes

Support	Where and how can your students get help when they need it?
1.	Require office hours of adjuncts
2.	Consider faculty donated tutoring (a math lab) with resources for students including computers

Assess program, pass rates, and final exams regularly. The process of improvement never ends.