Reformed Developmental Mathematics at the County College of Morris

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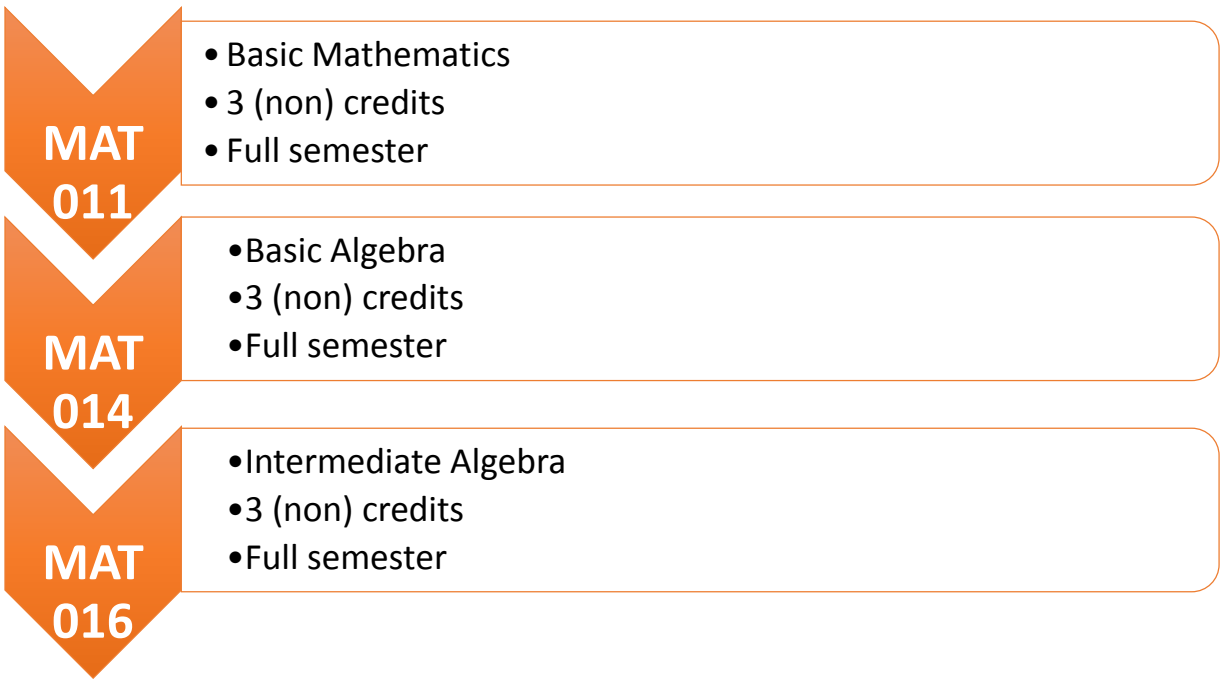
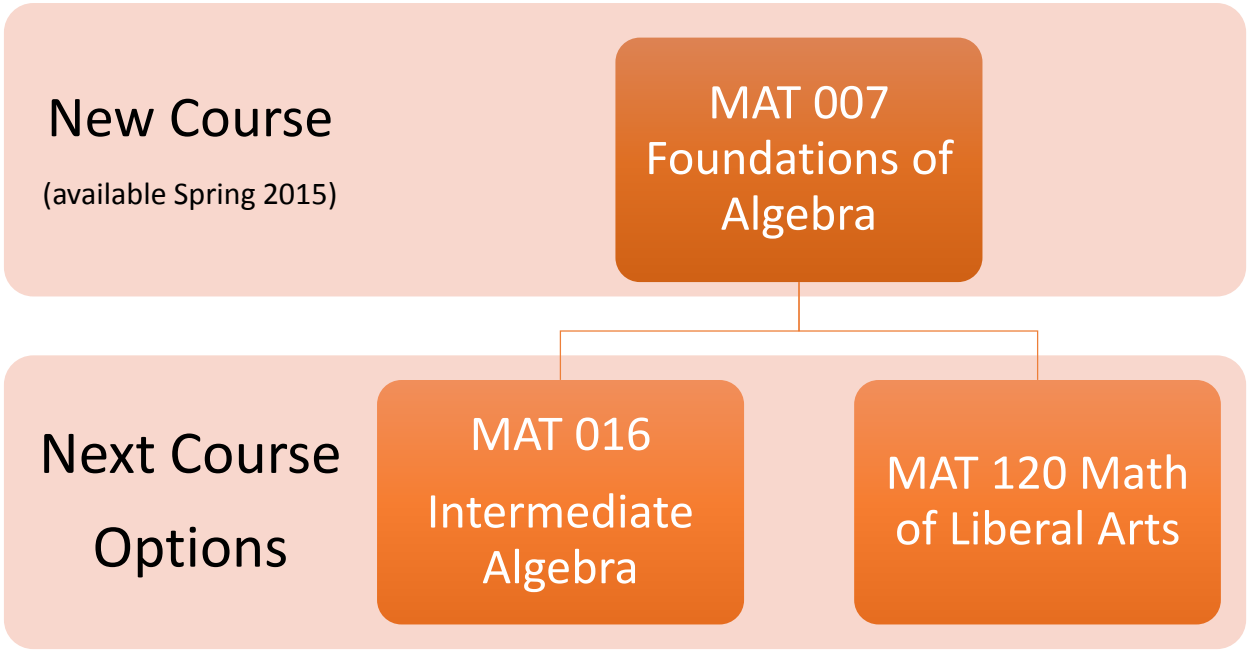
More and more students are attending community colleges, but most of them are not prepared for college-level work. Many students are surprised to be informed that they have failed placement tests and must take remedial courses. This detour from credit bearing courses can be discouraging, costly, and have detrimental effects on student success and retention. The County College of Morris (CCM) has redesigned the Developmental Math Track to help move students into credited classes faster, without compromising the integrity of its math program.

The previous developmental math sequence at CCM consisted of 3 face to face lecture courses: Basic Mathematics, Basic Algebra and Intermediate Algebra. This sequence created several problems. There were many possibilities for placement of students which created difficulties during advisement and registration. In addition, three semesters took too much time thereby affecting student retention and financial aid.

History of Developmental Mathematics



The County College of Morris has broken down the barriers that made it difficult for students to navigate the complex pathways with a redesigned curriculum in an accelerated format. This sequence provides a clear and consistent standard for all students, a supportive environment where instructors are there to help, and encourages students to enroll in required math courses as soon as possible, to avoid the deterioration of math knowledge.



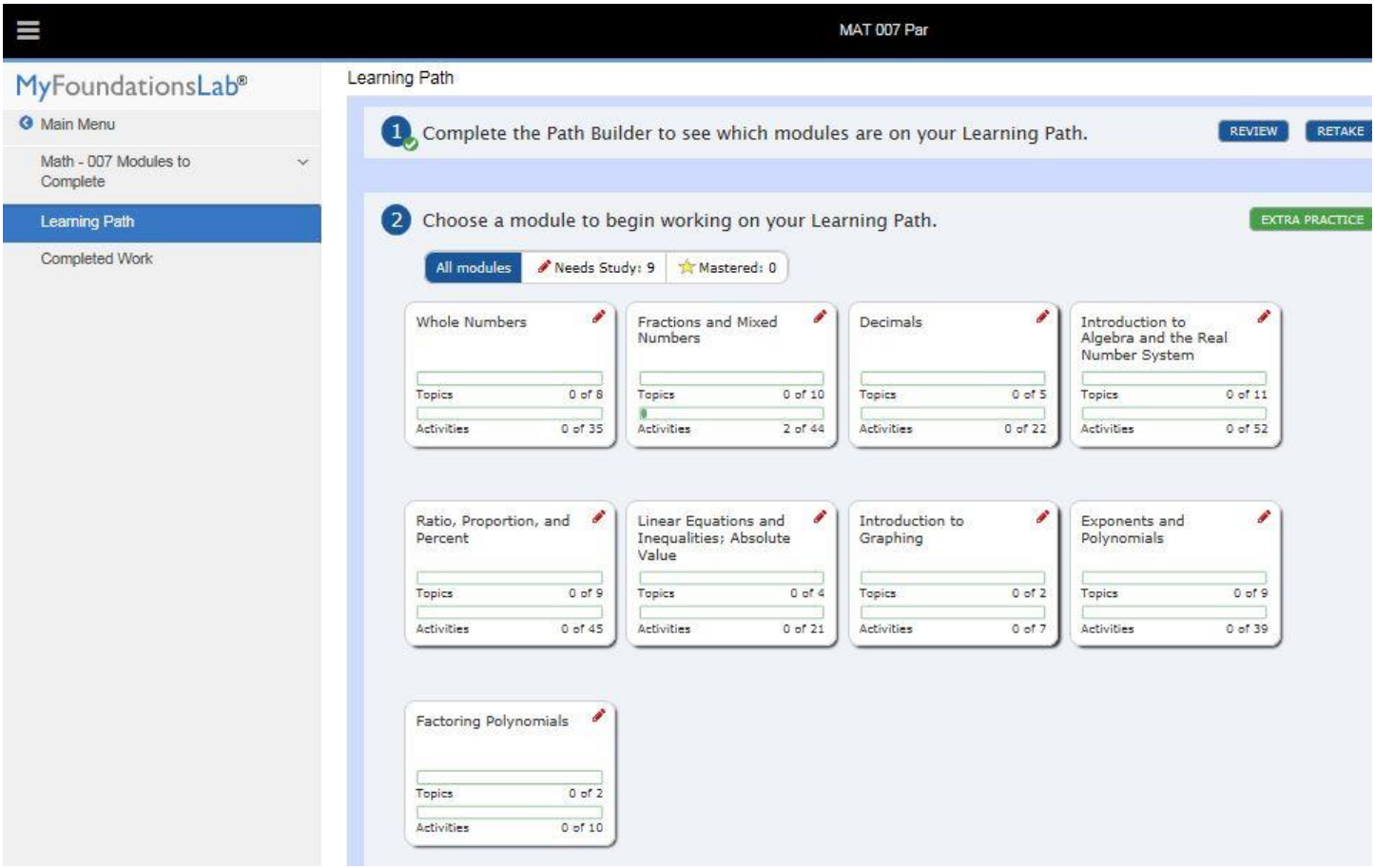
MAT 011 and MAT 014 have been consolidated to create MAT 007 Foundations of Algebra, an 8 week 2 (non)credit course.

MAT 007 integrates topics of arithmetic and basic algebra.

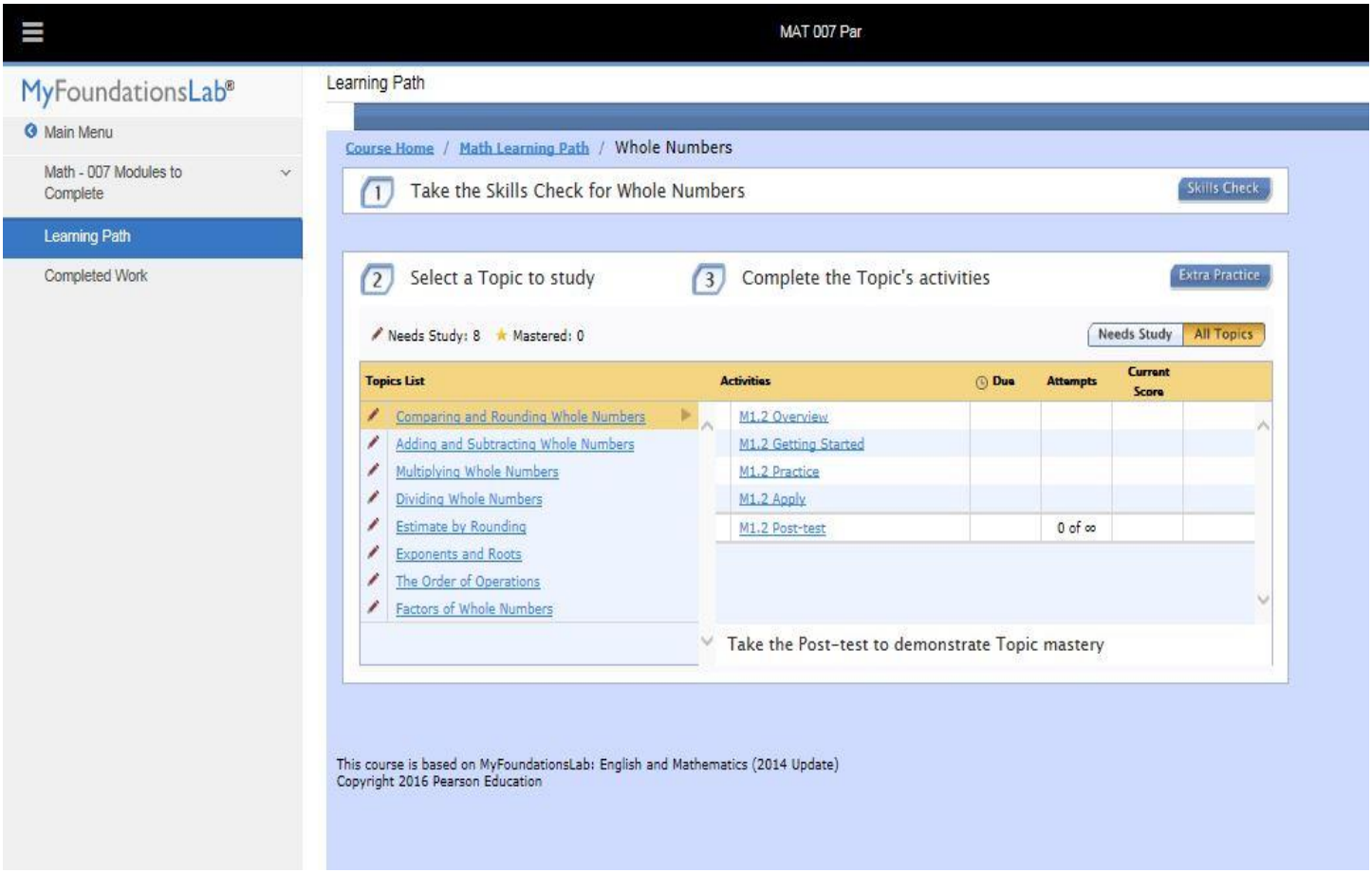
MAT 007 Course Description:

- Whole numbers
- Fractions and Mixed Numbers
- Decimals
- Introduction to Algebra and the Real Number System
- Ratio, Proportion and Percent
- Linear Equations and Inequalities
- Introduction to Graphing
- Exponents and Polynomials
- Factoring Polynomials

The topics are covered in 9 modules using MyFoundationsLab (Pearson).



Each student enrolled in MAT 007 works individually, using a self-paced computer course. Students meet 3 ¾ hours per week in dedicated computer labs. Students take a diagnostic test called the Pathbuilder on the first day of class. The Pathbuilder determines which of the 9 modules each student will be required to complete. Each section will be under the close supervision of an instructor to help the students with questions on their work, present tutorials and administer/proctor mastery tests. Students work on different modules of the computer program depending on their diagnostic test results. Each module includes a Skills Check, module activities and mastery tests. Students must score 70% on the mastery test to pass each module.



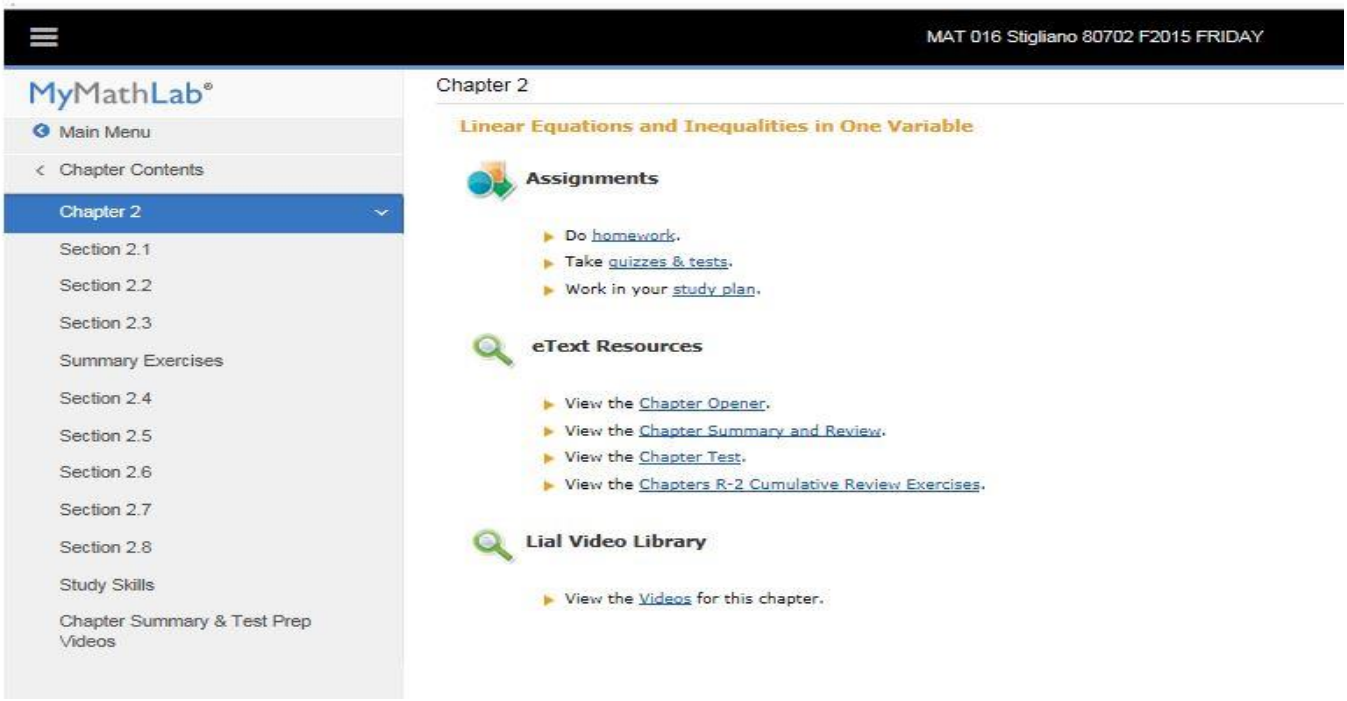
When all required modules are mastered, the student has passed the course. Students who are unable to complete the course in 8 weeks, must register for the next 8 week session. Their work will follow them. They will have three 8 week opportunities to complete the course. If unsuccessful after the 3rd attempt, they must meet with the Math Chairperson to re-evaluate their status.

Upon the completion of MAT 007, those student seeking a STEM major will need to take MAT 016 Intermediate Algebra. If MAT 007 is completed in the first 8 week session, students may enter a Late 8 week MAT 016 or take a traditional 16 week full semester course.

MAT 016 Intermediate Algebra Course Description A second-level preparatory (3 non-credited) algebra course designed to prepare students for credit-level mathematics courses. Topics covered include:

- Simplifying algebraic expressions
- Solving linear equations and inequalities
- Graphing lines, slope, equations of lines
- Systems of linear equations
- Exponents
- Polynomials
- Factoring and solving polynomial equations
- Rational expressions and equations
- Radicals
- Solving quadratic equations using the quadratic formula

All assignments in MAT 016 8 week or traditional 16 week are completed in MyMathLab (Pearson). The MyMathLab assignments have been standardized for the course, student expectations are all the same.



MAT 016 8 week Hybrid

- Hybrid courses include two parts. One is in-class time (face-to-face) and the second part is time spent on-line.
- Chapter work on *Simplifying algebraic expressions* and *Solving linear equations and inequalities* are completed independently by the students using the review assignments in MyMathLab.
- Remaining topics are taught during the face-to-face instructional sessions.
- Assessments are completed in class and created by individual instructors.

MAT 016 Traditional all topics are taught during face-to –face instructional sessions, all assignments are completed in MyMathLab.

26	6	HW Sect. 6.3	H	✓	01/12/15 2:48pm	12/10/15
27	6	HW Sect. 6.4	H	✓	01/12/15 2:48pm	12/10/15
28	6	HW Sect. 6.5	H	✓	01/12/15 2:48pm	12/10/15
29	6	HW Sect. 6.6	H	✓	01/12/15 2:48pm	12/10/15
30	7	HW Sect. 7.1	H	✓	01/12/15 2:48pm	12/10/15
31	7	HW Sect.7.2	H	✓	01/12/15 2:48pm	12/10/15
32	7	HW Sect. 7.3	H	✓	01/12/15 2:48pm	12/10/15
33	7	HW Sect. 7.4	H	✓	01/12/15 2:48pm	12/10/15
34	7	HW Sect. 7.5	H	✓	01/12/15 2:48pm	12/10/15
35	7	HW Sect. 7.6	H	✓	01/12/15 2:48pm	12/10/15
36	8	HW Sect. 8.1	H	✓	01/12/15 2:48pm	12/10/15
37	8	HW Sect. 8.2	H	✓	01/12/15 2:48pm	12/10/15
38	8	HW Sect. 8.3	H	✓	01/12/15 2:48pm	12/10/15
39	8	HW Sect. 8.4	H	✓	01/12/15 2:48pm	12/10/15
40	8	HW Sect. 8.5	H	✓	01/12/15 2:48pm	12/10/15
41	8	HW Sect. 8.6	H	✓	01/12/15 2:48pm	12/10/15
42	9	HW Sect. 9.3	H	✓	01/12/15 2:48pm	12/10/15
43	2-9	Review for Final Exam	H	✓	01/12/15 2:48pm	12/11/15

Upon the completion of MAT 007, Liberal Arts student will proceed to MAT 120 a credit bearing course.

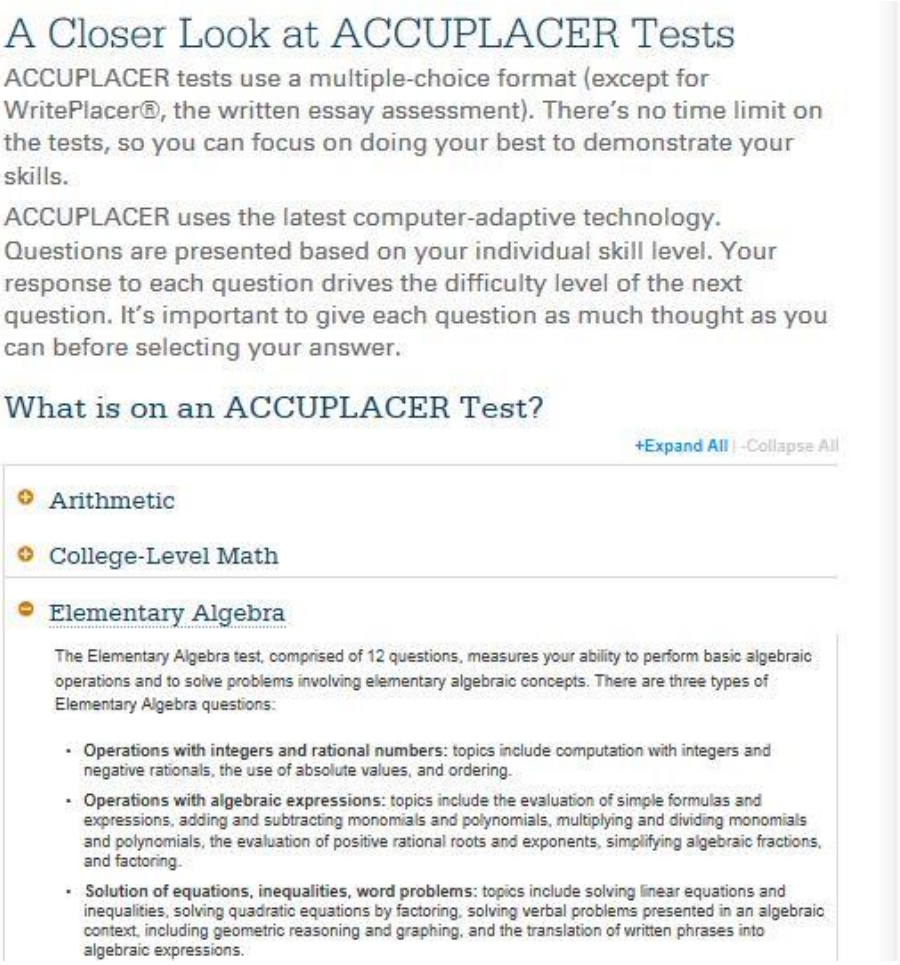
MAT 120 Math for Liberal Arts

This is a credited math course. It is often a terminal course and is geared mainly towards students majoring in Criminal Justice or Liberal Arts. Topics include:

- The history of mathematics
- Probability
- Statistics
- Geometry
- Number theory
- Algebra
- Graphs and functions

Early Intervention

There are many reasons why students need developmental coursework, but a primary cause is the misalignment between high school and college expectations. Our K-12 system was never designed to prepare all students for college, and students may meet all high school requirements and be admitted to college, only to later discover that they cannot pass placement tests for entry into college-level courses. There are a variety of reasons why students are not prepared for college. Some high school students do not have access to high-quality college-preparatory and advanced classes. Some deliberately choose easy courses, especially in their senior year, causing them to miss opportunities for rigorous classes that better prepare them for college. Others simply do poorly in high school. With this heavy on the minds of High School Educators, the District Coordinating Supervisor of Mathematics at Parsippany-Troy Hills School District reached out to CCM to help their seniors in their quest for higher education. Our goal is to ensure that students take the placement test seriously and are prepared to do as well as possible when they take the Accuplacer.



A Closer Look at ACCUPLACER Tests

ACCUPLACER tests use a multiple-choice format (except for WritePlacer®, the written essay assessment). There's no time limit on the tests, so you can focus on doing your best to demonstrate your skills.

ACCUPLACER uses the latest computer-adaptive technology. Questions are presented based on your individual skill level. Your response to each question drives the difficulty level of the next question. It's important to give each question as much thought as you can before selecting your answer.

What is on an ACCUPLACER Test?

+Expand All | -Collapse All

- Arithmetic
- College-Level Math
- Elementary Algebra

The Elementary Algebra test, comprised of 12 questions, measures your ability to perform basic algebraic operations and to solve problems involving elementary algebraic concepts. There are three types of Elementary Algebra questions:

- **Operations with integers and rational numbers:** topics include computation with integers and negative rationals, the use of absolute values, and ordering.
- **Operations with algebraic expressions:** topics include the evaluation of simple formulas and expressions, adding and subtracting monomials and polynomials, multiplying and dividing monomials and polynomials, the evaluation of positive rational roots and exponents, simplifying algebraic fractions, and factoring.
- **Solution of equations, inequalities, word problems:** topics include solving linear equations and inequalities, solving quadratic equations by factoring, solving verbal problems presented in an algebraic context, including geometric reasoning and graphing, and the translation of written phrases into algebraic expressions.

Parsippany-Troy Hills School District and CCM have joined forces to make this an obtainable goal with a pilot program for the 2015-2016 school year. Parsippany-Troy Hills School District has identified a group of seniors that are at risk of failing the Accuplacer. The group will be taking a Foundations of Algebra course that mirrors our MAT 007 in high school as a review for the Accuplacer. Students have taken the Accuplacer (College Board) as a base score in September 2015, they are currently working through the program and will take the Accuplacer again at the end of the school year in hopes that they will place out of developmental classes at CCM. If these students are successful on the Accuplacer, and attend CCM in Fall 2016, their score will stand.

Conclusion

The world today demands strong skills in mathematics, not only in the workforce, but also in everyday life. These demands will only increase over time. The underlying principal of the redesigned developmental track at CCM is to promote success, without lowering standards and expectations, while strengthening math skills and moving students to credited math courses in less time.