

MATH ADVISEMENT GUIDE

***This guide is for students who do NOT intend to take
MAT 109/MAT 111/MAT 112 or 122***

Math Placement: MAT 001 or MAT 003 or MAT 013

- Students who plan to take MAT 109 (College Algebra & Trigonometry) or higher must take MAT 003 as a prerequisite for MAT 109 [MAT 013 does NOT satisfy the prerequisite of MAT 109]
- Students whose major does NOT require MAT 109 or higher can take MAT 003 or MAT 013 [MAT 013 does NOT satisfy the prerequisite of MAT 109]
- Students who plan to take MAT 013 **AND** have a RDG 001 placement, RDG 001 must be successfully completed before or taken at the same time as MAT 013

Math Placement: MAT 002 or MAT 012

- Students who plan to take MAT 109 (College Algebra & Trigonometry) or higher must take MAT 002 as a prerequisite for MAT 109 [MAT 012 does NOT satisfy the prerequisite of MAT 109]
- Students whose major does NOT require MAT 109 or higher can take MAT 002 or MAT 012 [MAT 012 does NOT satisfy the prerequisite of MAT 109]
- Students who plan to take MAT 012 **AND** have a RDG 001 placement, RDG 001 must be successfully completed before or taken at the same time as MAT 012

Successful Completion of: MAT 012 or MAT 013

- Students who plan to take MAT 109 (College Algebra & Trigonometry) or higher must successfully complete MAT 002 or MAT 003 as a prerequisite for MAT 109 [MAT 012 and MAT 013 do NOT satisfy the prerequisite of MAT 109]
- Students whose placement is ENG 001 or RDG 001 must successfully complete these courses before taking a credit math course
- Students may take any of the following credit math courses and these courses can be taken in any order:
 - **MAT 100** – A Topical Approach to Mathematics (4 credits)
 - **MAT 101** – Concepts of Mathematics (3 credits)
 - **MAT 102** – Introduction to Statistics (3 credits)
 - **MAT 118** – Finite Mathematics: Quantitative Analysis (3 credits)

For students in selected teacher education transfer programs:

- **MAT 114** – Foundations of Mathematics for Educators (3 credits)
(Students will not receive credit for both MAT 100 **and** MAT 114)

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Successful Completion of: MAT 002 or MAT 003

- Students whose placement is ENG 001 or RDG 001 must successfully complete these courses before taking a credit math course
- Students may take any of the following credit math courses and these courses can be taken in any order:
 - **MAT 109** – College Algebra & Trigonometry (4 credits)
 - **MAT 116** – Engineering Technical Math I (4 credits)
 - **MAT 100** – A Topical Approach to Mathematics (4 credits)
 - **MAT 101** – Concepts of Mathematics (3 credits)
 - **MAT 102** – Introduction to Statistics (3 credits)
 - **MAT 118** – Finite Mathematics: Quantitative Analysis (3 credits)
(Students will not receive credit for both MAT 109 **and** MAT 116)

For students in selected teacher education transfer programs:

- **MAT 114** – Foundations of Mathematics for Educators (3 credits)
(Students will not receive credit for both MAT 100 **and** MAT 114)

Math Placement: MAT 100

- Students who plan to take MAT 109 (College Algebra & Trigonometry) or higher must successfully complete MAT 002 as a prerequisite for MAT 109 [MAT 012 does NOT satisfy the prerequisite of MAT 109]
- Students whose placement is ENG 001 or RDG 001 must successfully complete these courses before taking a credit math course
- Students may take any of the following credit math courses and these courses can be taken in any order:
 - **MAT 100** – A Topical Approach to Mathematics (4 credits)
 - **MAT 101** – Concepts of Mathematics (3 credits)
 - **MAT 102** – Introduction to Statistics (3 credits)
 - **MAT 118** – Finite Mathematics: Quantitative Analysis (3 credits)

For students in selected teacher education transfer programs:

- **MAT 114** – Foundations of Mathematics for Educators (3 credits)
(Students will not receive credit for both MAT 100 **and** MAT 114)

Continue reading for detailed descriptions of all courses

Students should carefully consider the descriptions below to decide which courses are most appropriate for them. Some descriptions include information that supplements the college catalog.

DEVELOPMENTAL MATH COURSES

For frequently asked questions, visit <http://matcmp.ncc.edu/index.php?loc=mathpath>

MAT 003 - Integrated Arithmetic and Introductory Algebra (0 credits - 6 contact hours)

Math Placement: MAT 001/MAT 003/MAT 013.

Course Description: Arithmetic and algebra will be integrated throughout the semester. Emphasis will be placed on the fundamental operations of integers and rational numbers, ratio and proportion, percentage, factoring, linear and fractional equations, exponents, radicals, quadratic equations, and right triangles. Various relationships will be explored both graphically and analytically. Hand-held calculators will be used.

This course satisfies the prerequisite for MAT 109 (College Algebra & Trigonometry).

This course combines the basics of arithmetic with the essentials of algebra to prepare students for credit math courses. Topics include:

- arithmetic operations including applications involving proportions, ratios, and percent
- solving linear equations
- graphing linear equations
- solving systems of linear equations
- operations on polynomials
- factoring polynomials
- solving polynomial equations

MAT 013 - Integrated Arithmetic and Quantitative Reasoning 1 (0 credits - 6 contact hours)

Math Placement: MAT 001/MAT 013/MAT 003.

Prerequisite: RDG 001, may be taken concurrently.

Course Description: This course integrates arithmetic and quantitative literacy with mathematical concepts such as fluency with numbers, proportional reasoning, data interpretation, algebraic reasoning, graphing lines, and modeling. Group work and class discussions will be used to investigate mathematical concepts based on real-life examples. Some examples include: social justice, home repair, population growth and density, and congressional structure. Students who intend to major in science, technology, engineering or mathematics must take MAT 003. Hand-held calculators will be used.

This course does NOT satisfy the prerequisite for MAT 109 (College Algebra & Trigonometry). Students who need MAT 109 as a degree requirement must successfully complete MAT 003 before taking MAT 109.

This course combines the basics of arithmetic with the essentials of quantitative reasoning to prepare students for credit math courses. Topics include:

- arithmetic operations including applications involving proportions, ratios, and percent
- estimation and solving applications involving large numbers
- estimation using fractions, percent and ratios
- unit conversions
- analyzing measures of central tendency
- reading, interpreting, and analyzing quantitative data from graphs
- using formulas and algebraic expressions in realistic applications
- creating and solving equations that relate to quantitative reasoning applications
- graphing and analyzing linear models by focusing on rate of change of parameters

MAT 002 - Introductory Algebra (0 credits – 4.5 contact hours)

Math Placement: MAT 002/MAT 012.

Course Description: Topics include: fundamental processes of arithmetic and algebra, factoring, linear and fractional equations, exponents, radicals, quadratic equations and right triangle trigonometry. Hand-held calculators will be used.

This course satisfies the prerequisite for MAT 109 (College Algebra & Trigonometry).

This course prepares students for algebra intensive credit math courses by teaching the essentials of algebra. Topics include:

- solving linear equations
- graphing linear equations
- solving systems of linear equations
- operations on polynomials
- factoring polynomials
- solving polynomial equations

MAT 012 - Quantitative Reasoning 1 (0 credits – 4.5 contact hours)

Math Placement: MAT 012/MAT 002.

Prerequisite: RDG 001, may be taken concurrently.

Course Description: This course integrates quantitative literacy with mathematical concepts such as fluency with numbers, proportional reasoning, data interpretation, algebraic reasoning, graphing lines, and modeling. Group work and class discussions will be used to investigate mathematical concepts based on real-life examples. Some examples include: social justice, home repair, population growth and density, and congressional structure. Students who intend to major in science, technology, engineering or mathematics must take MAT 002. Hand-held calculators will be used.

This course does NOT satisfy the prerequisite for MAT 109 (College Algebra & Trigonometry). Students who need MAT 109 as a degree requirement must successfully complete MAT 002 before taking MAT 109.

This course focuses on real-world contextualized applications of quantitative reasoning to prepare students for credit math courses. Topics include:

- estimation and solving applications involving large numbers
- estimation using fractions, percent and ratios
- unit conversions
- analyzing measures of central tendency
- reading, interpreting, and analyzing quantitative data from graphs
- using formulas and algebraic expressions in realistic applications
- creating and solving equations that relate to quantitative reasoning applications
- graphing and analyzing linear models by focusing on rate of change of parameters

CREDIT MATH COURSES

MAT 100 - A Topical Approach to Mathematics (4 credits)

Students who plan to take MAT 109 (College Algebra & Trigonometry) must successfully complete MAT 002 unless their math placement is MAT 109 or higher.

Math Placement: MAT 100 or higher.

Prerequisite: Successful completion of MAT, ENG 001 and RDG 001 developmental course requirements prior to starting the course.

Course Description: Fundamental mathematics topics and their applications. Topics include problem solving, number systems, geometry, consumer mathematics, mathematical modeling, management science, and social choice and decision making. Students will NOT receive credit for both MAT 100 and MAT 114. MAT 100 satisfies SUNY GEN ED-GMAT; NCC GEN ED-MATH.

This course includes a variety of different mathematical topics and their applications. Some of the topics are:

- critical thinking skills: mastering the skills of reasoning, estimating and problem solving
- number theory and real number system: arithmetic, geometric and Fibonacci sequences
- algebra, graphs, and functions: using systems of linear inequalities to find optimal solutions of business applications with limited resources
- metric system: conversions to/from metric system in real-life examples
- consumer mathematics: simple and compound interest in applications such as credit card debt, mortgages and savings plans
- graph theory: solving Euler and Hamiltonian circuits, spanning trees in real-world applications, such as the traveling salesman problem, by brute force, nearest neighbor and Kruskal's Algorithm methods
- voting methods: plurality, majority, Borda Count, Pairwise with Elimination and Arrow's Impossibility Theorem, and importance of deciding on voting method and its flaws before ballots are cast

This course may be of particular interest to students interested in banking, information technology, business or government.

MAT 101 - Concepts of Mathematics (3 credits)

Students who plan to take MAT 109 (College Algebra & Trigonometry) must successfully complete MAT 002 unless their math placement is MAT 109 or higher.

Math Placement: MAT 100 or higher.

Prerequisite: Successful completion of MAT, ENG 001 and RDG 001 developmental course requirements prior to starting the course.

Course Description: Topics include formal symbolic logic, arguments, methods of proof, basic concepts of sets, and set operations. MAT 101 satisfies SUNY GEN ED-GMAT; NCC GEN ED-MATH.

This is a logic course, so it may seem very different from other math courses. This course looks at the language of arguments and proofs, rather than focusing on numbers and calculations. Topics include:

- formal symbolic logic: symbolic logic rules
- validity of arguments: use written information to draw valid conclusions
- formal proof
- set theory

Other possible topics include:

- circuits theory
- strategies for simple games (like tic-tac-toe)
- basic decision theory

This course may be of particular interest to students interested in journalism, information technology, education, English, philosophy or law.

MAT 102 - Introduction to Statistics (3 credits)

Students who plan to take MAT 109 (College Algebra & Trigonometry) must successfully complete MAT 002 unless their math placement is MAT 109 or higher.

Math Placement: MAT 100 or higher.

Prerequisite: Successful completion of MAT, ENG 001 and RDG 001 developmental course requirements prior to starting the course.

Course Description: Topics include appropriate and inappropriate uses of statistics, measures of central tendency and variability, basic concepts of probability, the binomial, normal and 't' distributions, testing hypotheses, estimation, chi-square, linear regression, and correlation. MAT 102 satisfies SUNY GEN ED-GMAT; NCC GEN ED-MATH. MAT 102 serves as a prerequisite for MAT 103 (Applied Statistics) and MAT 119 (Data Science/Analytics).

In newspapers, television, magazines and on the Internet, we see graphs and figures that are presented to us as facts. It is useful to know how this information is gathered and organized, and to determine whether these claims seem accurate or misleading. Introductory statistics is an important course for understanding such data and achieving success in many professional careers.

In this course, topics include:

- appropriate and inappropriate uses of statistics
- the organization and presentation of data
- descriptive statistics
- linear correlation and regression
- probability applications
- discrete and continuous probability distributions
- sampling distributions
- estimation
- hypothesis testing
- the chi-square distribution

This course may be of particular interest to students interested in criminal justice, data science, government, leadership careers, business, psychology, sociology, education or nursing.

MAT 114 - Foundations of Mathematics for Educators (3 credits)

This course is only for students enrolled in selected teacher education transfer programs. Students who plan to take MAT 109 (College Algebra & Trigonometry) must successfully complete MAT 002 unless their math placement is MAT 109 or higher.

Math Placement: MAT 100 or higher.

Prerequisite: Successful completion of MAT, ENG 001 and RDG 001 developmental course requirements prior to starting the course.

Course Description: This course is intended for students who are interested in teaching at the elementary school level. Topics include a development of binary algorithms, the real numbers, field properties of the real number system as applied to abstract mathematical systems, numerations systems, functions and equivalence relations, solving systems of algebraic equations and number theory, including some algebraic proofs. Applications, historical perspectives, problem solving and use of technology will be emphasized in all topics. Students will NOT receive credit for both MAT 100 and MAT 114. MAT 114 satisfies SUNY GEN ED-n/a; NCC GEN ED-MATH.

MAT 118 - Finite Mathematics: Quantitative Analysis (3 credits)

Students who plan to take MAT 109 (College Algebra & Trigonometry) must successfully complete MAT 002 unless their math placement is MAT 109 or higher.

Math Placement: MAT 100 or higher.

Prerequisite: Successful completion of MAT, ENG 001 and RDG 001 developmental course requirements prior to starting the course.

Course Description: Topics include applications of finite mathematical models, primarily to problems in business and management. Matrix operations, Markov analysis, linear programming and the simplex method, game and decision theory. MAT 118 satisfies SUNY GEN ED-GMAT; NCC GEN ED-MATH. MAT 118 ties a variety of interconnected math topics together with applications to business, social science and other fields.

Some topics included in this course are:

- probability
- linear programming
- game theory (gambling/ competing businesses)
- matrix operations
- Markov chains

This course may be of particular interest to students focusing on business or for students who need an easily transferable liberal arts math course.