Math is the most basic language of science, quantum physics, biology, and economics, even applicable to the behavioral sciences. In Burke’s Math Department, we take a tough subject and teach it such that challenges become fun and exciting – and the field’s beauty and precision become evident. Every student can be successful in math if placed in a course that is appropriately challenging. Our approach fosters student motivation, personal responsibility, orderly thinking, and the logical presentation of work.

We offer two pathways in math. Students are free to move from one pathway to the other when their interest in and comfort with math develops. “Advanced” or AP courses are offered to students who are ready for intense challenge and an accelerated pace.

Required Courses

- **Algebra 1**: this course teaches the basic concepts and skills of Algebra. Students solve a range of problems to practice application of key skills and concepts while continuously reviewing earlier ideas and strategies.
- **Algebra 2**: this course emphasizes facility with algebraic expressions and forms, especially linear and quadratic forms, powers and roots, and functions based on those concepts.
- **Geometry** or **Advanced Geometry**: taken after Algebra 2, this course imparts general and specific knowledge of geometric facts and figures and teaches deductive reasoning as it applies to geometric proofs and problems.
Elective Courses

- **Pre-Calculus** or **Advanced Pre-Calculus**: this course is both a culmination of a sequence of Algebra and a preparation for Calculus. The concept of “function” is fundamental to the course, as well as sharpening algebra skills and refining understanding of algebra and trigonometry.

- **Calculus AB** or **AP Calculus AB**: this advanced course traditionally follows Pre-Calculus and is roughly equivalent to one semester of college Calculus. It includes the study and application of differentiation and integration, as well as graphical analysis.

- **AP Calculus BC**: AP Calculus BC is a continuation of our AP Calculus AB course, and is available to well-prepared students who have succeeded in AB. The course begins with a review of concepts from AP Calculus AB and is designed to prepare students to take the College Board’s AP exam in May.

- **Multivariable Calculus**: the prerequisite to this course is Calculus BC. Topics include vectors and matrices, parametric curves, partial derivatives, double and triple integrals, and vector calculus in 2- and 3-dimensional space.

- **Statistics**: this one-trimester course teaches about the collection, presentation and interpretation of data. Emphasis in this course is placed on quantitative reasoning, graphical displays of data, interpretation of numerical patterns, and inference. Reliance on real data allows for exposure to timely, socially-relevant issues.

- **Financial Algebra**: this one-trimester course teaches how to manage resources and make sound personal financial decisions about real-world situations; topics include banking, taxes, investing, consumer protection, and credit management.

- **Advanced Statistics**: this is a rigorous student-centered, project-based, and social justice-oriented course, covering exploratory data analysis, data collection and experimental design, probability distributions, and statistical inference, including federal statistics and published studies.

Preparation for College

Students conclude our mathematics program with:

- problem-solving skills that they may apply to real-world phenomena
- positive attitude to approaching difficult tasks
- understanding that making mistakes can be an integral part of the learning process
- readiness for the next level of math that may be required for their academic goals