MATHEMATICS

♦ **THREE (3) CREDITS, TO INCLUDE INTEGRATED MATH 1 OR ABOVE, ARE REQUIRED TO GRADUATE.**

♦ **Course offerings not having sufficient enrollment after registration will be discontinued for the 2018-2019 school year.**

♦ **The integrated courses include Algebra, Geometry, Number and Quantity, and Statistics standards in each course. This integration allows students not only to continue to systematically build proficiency in each domain (Algebra, Geometry, Number and Quantity, and Statistics / Probability) each year, but also attempts to help students see the connections and interrelationships between these four domains of mathematics.**

RECOMMENDED COURSE SEQUENCE IN MATHEMATICS

Every student should take the highest level of mathematics class in which he/she will be successful. This gives the student the maximum number of career options. Students should use this chart as well as the recommendation given by their current math teacher to choose an appropriate course in mathematics. Students and parents should take the teacher recommendations seriously.

NOTE: Some lower level mathematics courses may not apply toward college mathematics requirements. (See below)

Previous Course	Grade	Recommended Next Course
Middle School – Math 8		Integrated Math 1
Integrated Math 1 (includes those students enrolled in Integrated Math 1 in 8th grade and have passed the End of Course exam)	A, B, C	Integrated Math 2
	D	Recommend retake Integrated Math 1
	F	Retake Integrated Math 1
Integrated Math 2	A, B, C	Integrated Math 3
	D	Recommend retake Integrated Math 2
	F	Retake Integrated Math 2
Integrated Math 3	A, B	Pre-Calculus with Trigonometry
	A, B	College Algebra
	A, B	Trigonometry
	A, B, C	Probability and Statistics
	A, B, C, D	Transition to College Mathematics
	D	Recommend retake Integrated Math 3
	F	Retake Integrated Math 3

Previous Course	Grade	Recommended Next Course
Pre-Calculus w/ Trigonometry	A, B	AP Calculus
	A, B, C	College Algebra
	A, B, C	Probability and Statistics
	A, B, C, D, F	Transition to College Mathematics
Transition to College Mathematics	A, B	College Algebra
	A, B, C	Probability and Statistics
	A, B	Trigonometry
Trigonometry	A, B, C, D	Probability and Statistics
	A, B, C, D, F	Transition to College Mathematics

The Standards for Mathematical Practice are embedded in each of the courses offered below. The focus of these standards requires students to make sense of problem situations, reason and justify in mathematics.

Integrated Math 1   One Year - 1 Credit
The fundamental purpose of Integrated Math 1 is to formalize and extend the mathematics that students learned in the middle grades. Students will deepen and extend understanding of linear relationships. Students will also study exponential and quadratic relationships, equations, descriptive statistics, congruence of geometric figures, and algebra and geometry through coordinates.

Integrated Math 2   One Year - 1 Credit
The focus of Integrated Math 2 is to extend the concepts of linear and quadratic expressions, equations, and functions. This will be accomplished by comparing their characteristics and behavior to those of linear and exponential relationships from Integrated Math 1. Power functions are introduced. Additionally, systems of equations will be used to build upon an understanding of linear and quadratic functions. Coordinate geometry will be used to make strong connections between algebraic operations and geometric transformations. The link between probability and data is explored through conditional probability and counting methods, including their use in making and evaluating decisions. The study of similarity leads to an understanding of right triangle trigonometry and connects to quadratics through Pythagorean relationships. Circles, with their quadratic algebraic representations, round out the course.

Integrated Math 3   One Year - 1 Credit
The focus of Integrated Math 3 is to connect and apply the accumulation of learning from students' previous courses. Students will apply methods from probability and statistics to draw inferences and conclusions from data. Students will work with polynomial, rational, radical, and inverse (to include logarithmic) functions. The need for extending the set of rational numbers arises and real and complex numbers are introduced so that all quadratic equations can be solved. Properties of circles and circular functions will be developed to include radian measure and periodic change. Students will enhance their reasoning knowledge by developing an understanding of formal reasoning in geometric, algebraic, and statistical contexts. This includes both inductive and deductive reasoning.

Integrated Math Lab   **One Semester - 1/2 Elective Credit**

The purpose of this course is to provide additional support to students in their effort to meet the standards of Integrated Math. This course is taken in addition to the student's regular math class. The course gives students extra time to master content and utilizes a variety of strategies to help students build a stronger foundation for success in their current and future mathematics courses. Students will be identified for this class based on selection criteria.

Trigonometry (11-12) (Stevens only)   **One Semester - 1/2 Credit**

►Completion of Integrated Math 3 (with a grade of "B" or better) is essential for success in this class.
►This course is designed for students who do not plan to take Pre-Calculus with Trigonometry.
►Students will not receive graduation credit for this course if they have received graduation credit for Pre-Calculus with Trigonometry.

This course includes the study of trigonometric functions as they relate to triangles and to circular functions, their graphs, the algebraic relationships between the functions, and an introduction to vectors.

Probability and Statistics (11-12)   **One Semester - 1/2 Credit**

►Completion of Integrated Math 3 is essential for success in this class.

Students will study the three major topics in statistics: descriptive statistics (the basic tools of the statistician: Mean, standard deviation, etc…), inferential statistics (tools that ensure valid experimental design and results), and probability (the mathematics of chance, randomness, and games of chance). They will also learn to critically evaluate statistics in their daily lives in order to become more informed consumers and citizens.

Pre-Calculus with Trigonometry (11-12)   **One Year - 1 Credit**

►Completion of Integrated Math 3 (with a grade of "B" or better) is essential for success in this class.
►Students will not receive graduation credit for this course if they have received graduation credit for Trigonometry. (Stevens only)

Pre-Calculus with Trigonometry prepares a college-bound student for their first course in calculus. The course includes the study of advanced functions, including polynomial, exponential, logarithmic, trigonometric, and circular functions. Students will study the algebraic relationships between these functions, their graphs, and transformations of these functions. Students will also be introduced to the concepts of limits.

AP Calculus AB (12)   **One Year - 1 Credit**

►For success in this course, completion of Pre-Calculus with Trigonometry is recommended.
►This course is designed for the college or university-bound student and is taught at a college level.
►This class will be weighted on the 5.0 scale.

This is an introductory study of differential and integral calculus including applications in the physical, natural, and social sciences. Topics studied include functions and their graphs, limits and continuity, the derivative and applications, the integral and applications. Students may elect to take the AP Calculus exam at the conclusion of the course at their expense.

Transition to College Mathematics (11-12)   **One Semester - 1/2 Credit**
►*Completion of Integrated Math 3 is essential for success in this class.*
This course will aid in the retention of math skills for later college or career level work. Topics covered in this course are designed to strengthen and review algebraic reasoning. Students will study problem solving strategies, set theory, real number systems, and linear and quadratic functions.

College Algebra   **One Semester - 1/2 Credit**
(11-12) (Central – on-line course being taught through Black Hills State University)
(12) (Stevens – 50% of the class must sign up for college credit in order for college credit to be available)
►*Completion of Integrated Math 3 (with a grade of "B" or better) is essential for success in this class.*
►*Successful completion and payment of tuition will earn the student 3 college credits. The final grade will appear on a BHSU transcript and will become part of the student's permanent transcript within the SD university system.*
►*Students must meet additional requirements in order to be eligible for dual credit courses. See your school counselor with any questions.*
This course includes a study of equations and inequalities; .polynomial functions and graphs; exponents; radicals; the binomial theorem; zeros of polynomials; systems of equations; exponential, logarithmic, and inverse functions, applications and graphs. Other topics will be selected from sequences, series, and complex numbers.

Geometry in Construction (11 – 12) (Rapid City HS only)
                    One Year – 2 Credits (1 credit – Geometry & 1 credit – Building Trades)
►*This course contains 2 parts - Geometry in Construction & Building Trades.*
►*Students may earn up to 2 Credits with successful completion of both parts.*
►*Completion of Integrated Math 2 is essential for success in this class.*
This integrated geometry and construction course is recommended for students interested in pre-engineering, architecture, construction management, interior design, landscape architecture, construction trades, and surveying. Students will learn safety, problem solving, machine and tool use, and drawing interpretation. Student will have minimal or no previous construction experience. They will be exposed to practical skills in building and carpentry trades by constructing various carpentry projects; use various alternative materials, in addition to wood. Students will understand and exploit the interdependence between algebra and geometry, learn core set of geometry facts, and use coordinate geometry in the study of area, perimeter, volume, transformations, congruence, and functions.