BROWNELL TALBOT

Math Analysis Prioritized Standards

The prioritized standards listed align with both the NCTM (National Council for Teachers of Mathematics) and the Nebraska State Standards. The NCTM also includes a set of Process Standards for grades preschool through 12 that highlight mathematical processes that students draw on to acquire and use their content knowledge (see the link on the next page).

Red indicates foundational skill for an AP calculus path.
Blue indicates foundational skill for a AP statistics path.
Purple indicates a foundational skill for both an AP calculus and AP statistics path.

Number & Operations	
Understand numbers, ways of representing numbers, relationships among numbers, and number systems	Understand vectors and matrices as systems that have some of the properties of the real-number system **Apply a deeper understanding of very large and very small numbers and of various representations of them** (ACT Math): N 701-706 • Analyze and draw conclusions based on number concepts • Apply properties of rational numbers and the rational number system • Apply properties of real numbers and the real number system, including properties of irrational numbers • Apply properties of complex numbers and the complex number system • Multiply matrices • Apply properties of matrices and properties of matrices as a number system AF 701 • Solve complex arithmetic problems involving percent of increase or decrease or requiring integration of several concepts (e.g. using several ratios, comparing percentages, or comparing averages) • (e.g. using several ratios, comparing percentages, or comparing averages)
Understand meanings of operations and how they relate to one another	**Develop an understanding of properties of, and representations for, the addition and multiplication of vectors & matrices**
Compute fluently and make reasonable estimates	Develop fluency in operations with real numbers, vectors, and matrices, using mental computation or paper/pencil calculations for simple cases and technology for more complicated cases **Judge the reasonableness of numerical computations and their results**

Algebra		
Understand patterns, relations, & functions	Analyze functions of two variables by investigating rate of change, intercepts, zeros, asymptotes, and local and global behavior	
	Understand and compare the properties and classes of functions, including exponential, polynomial, rational, logarithmic, and periodic functions	
	(ACT Math): AF 706 -Given an equation or function, find an equation or function whose graph is a translation by specified amounts in the horizontal and vertical direction A 703 -Apply the remainder theorem for polynomials, that P(a) is the remainder when P(x) is divided by (x-a) F 701-704 -Compare actual values and the values of a modeling function to judge model fit and compare models -Build functions for relations that are exponential -Exhibit knowledge of geometric sequences -Exhibit knowledge of unit circle trigonometry F 706-707 -Exhibit knowledge of logarithms -Use trigonometric concepts and basic identities to solve problems	
Represent and analyze mathematical situations and structures using algebraic symbols	**Use a variety of symbolic representations, including recursive and parametric equations**	
	Use symbolic algebra to represent and explain mathematical relationships	
	(ACT Math): AF 703-705 -Analyze and draw conclusions based on properties of algebra and/or functions -Analyze and draw conclusions based on information from graphs in coordinate planes -Identify characteristics of graphs based on a set of conditions or on a general equations such as y=ax2 +c F 705 -Match graphs of basic trigonometric functions with their equations F 708 -Write an expression for the composite of two simple functions	
Use mathematical models to represent and understand quantitative relationships	**Draw reasonable conclusions about a situation being modeled**	
	(ACT Math): AF 702 • Build functions and write expressions, equations, and inequalities when the process requires planning and/or strategic manipulation A 701-702 • Solve simple absolute value inequalities • Match simple quadratic inequalities with their graphs on a number line	
Analyze change in various contexts		
Measurement		
Understand measurable attributes of objects and the units, systems, and processes of measurement	**Make decisions about units and scales that are appropriate for problem situations involving measurement.**	
Apply appropriate techniques, tools, and formulas to determine measurements	**Analyze precision, accuracy, and approximate error in measurement situations**	

Following the completion of Math Analysis, students choose from the following courses to align with the mathematics path of their choice: Introduction to Statistics, AP Statistics, AP Calculus AB, & AP Calculus BC.

AP Calculus AB & BC Framework:
https://secure-media.collegeboard.org/digitalServices/pdf/ap/ap-calculus-ab-and-bc-course-and-exam-description.pdf

AP Statistics Framework: http://media.collegeboard.com/digitalServices/pdf/ap/ap-statistics-course-description.pdf

NCTM Process Standards: brownell.edu/nctm