MATHEMATICS

Mission Statement:

The mission of the Lisle mathematics department is to provide students with the mathematical concepts and skills necessary for success in college and the workplace. The instruction, tasks, and assessments are aligned with the Common Core State Standards and mathematical practices. Students will be encouraged to think and to make conjectures while persevering through challenging problems. They will be educated to be critical thinkers and collaborative problem solvers.

Mathematical Practices:

Make sense of problems and persevere in solving them.

Reason abstractly and quantitatively.

Construct viable arguments and critique the reasoning of others.

Model with mathematics.

Use appropriate tools strategically.

Attend to precision.

Look for and make use of structure.

Look for and express regularity in repeated reasoning.

Course Offerings:

Algebra I Core **(Freshman)**

This course will focus on core standards and concepts necessary for students to succeed in advanced mathematics courses. In particular, the instructional program in this class provides for the use of algebraic skills in a wide range of problem-solving situations. The concept of function is emphasized throughout the course. The units of study are; Relationships Between Quantities & Reasoning with Equations, Linear & Exponential Relationships, Descriptive Statistics, Expressions & Equations, and Quadratic Functions & Modeling. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: 8th grade mathematics

Algebra I **(Freshman)**

This course is designed to provide a formal development of the algebraic skills and concepts necessary for students to succeed in advanced courses. In particular, the instructional program in this course provides for the use of algebraic skills in a wide range of problem-solving situations. The concept of function is emphasized throughout the course. The units of study are; Relationships Between Quantities & Reasoning with Equations, Linear & Exponential Relationships, Descriptive Statistics, Expressions & Equations, and Quadratic Functions & Modeling. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: 8th grade mathematics

Applied Geometry **(Sophomore-Junior)**

This course is intended to apply and utilize skills learned in Algebra 1. The units of study are congruence and constructions, similarity and trigonometry, three dimensional figures, coordinate geometry, circles with and without coordinates, and with mathematical reasoning integrated throughout the year. This course is a pillar in the understanding of mathematics as a spatial concept and is critical to understanding higher level mathematics. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: Algebra I Core or Algebra 1

Geometry **(Freshman-Sophomore)**

This course is intended to apply and utilize skills learned in Algebra 1. The units of study are congruence and constructions, similarity and trigonometry, three dimensional figures, coordinate geometry, circles with and without coordinates, and probability with reasoning and proof integrated throughout the year. This course is a pillar in the understanding of mathematics as a spatial concept and is critical to understanding higher level mathematics. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: A in Core Algebra 1 and department approval, Algebra I, or 8th grade Algebra I

Honors Geometry **(Freshman-Sophomore)**

This course is designed to build on algebraic concepts as well as learn the fundamentals of geometry through student exploration on Geometer's Sketchpad. This course places heavy emphasis on making algebraic and geometric connections. The units of study are; lines & angles, transformations, triangles, polygons, circles, area, right triangles, similarity, trigonometry, and surface area & volume. The content of this course is essential for those who plan to continue their study of mathematics in both high school and college. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: A in Algebra I or 8th grade Algebra I and department approval

Algebra II **(Sophomore-Junior)**

This course is designed to build on algebraic and geometric concepts from Algebra 1 and Geometry. The units of study are polynomials, rational and radical relationships, modeling with functions, inferences and conclusions from data. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: Geometry or Applied Geometry

Algebra II/Trigonometry **(Sophomore-Junior)**

This course is designed to build on algebraic and geometric concepts from Algebra 1 and Geometry. The units of study are polynomials, rational and radical relationships, trigonometric functions, modeling with functions, inferences and conclusions from data. It also introduces matrices and their properties. The content of this course is essential for those who plan to continue their study of mathematics in both high school and college. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: C or better in Geometry

Honors Algebra II/Trigonometry **(Sophomore-Junior)**

This course is designed to build on algebraic and geometric concepts from Algebra 1 and Geometry, through student explorations and small group problem solving. This course places heavy emphasis on student investigation and making connections. The units of study are polynomials, rational and radical relationships, trigonometric functions, modeling with functions, inferences and conclusions from data. It also introduces matrices and their properties. The content of this course is essential for those who plan to continue their study of mathematics in both high school and college. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: C or better in Honors Geometry or A in Geometry and department approval

Pre-Calculus **(Junior-Senior)**

This course is designed for the college-bound student. It encompasses and extends concepts of advanced algebra. The content of the course includes various topics of college algebra, analytical geometry, and an introduction to Calculus. The class will also include the further study of functions, trigonometry, conic sections, exponential and logarithmic functions, and sequences and series. Students who successfully complete this course should be prepared for Calculus. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: C or better in Algebra II/Trigonometry

Honors Pre-Calculus **(Junior-Senior)**

This course is designed to build on algebraic and geometric concepts from Algebra II/Trigonometry utilizing student exploration and small group problem solving. This course places heavy emphasis on student investigation and making connections. The class will include the further study of functions, trigonometry, conic sections, exponential and logarithmic functions, and sequences and series. Students who successfully complete this course should be prepared for Calculus. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: C or better in Honors Algebra II/Trigonometry or A in Algebra II/Trigonometry and department approval

Probability and Statistics **(Senior)**

This course uses concepts learned in classes up to and including Algebra II. The topics covered include exploring and understanding data, variable relationships, proper data collection methods, randomness, and applications to the world at large. This course is intended to introduce students to college level probability and statistics concepts that will be covered in a variety of majors. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: Algebra II/Trigonometry or B or better in Algebra II

AP Calculus **(Junior-Senior)**

Advanced Placement Calculus is a comprehensive year-long course in the study of both differential and integral calculus. It is intended to be the equivalent of a college level Calculus I course. Students will be studying the concepts of functions, graphs, limits, derivatives and integrals as outlined in the AP Calculus Course description (as it appears on the AP Central website). The intent is for students to master the fundamentals of calculus in order to succeed on the AP Calculus AB exam and be adequately prepared to be successful in higher level mathematics courses. Students who successfully complete the course and exam may receive credit, advanced placement or both for a one-semester college Calculus course. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: B or better in Pre-Calculus

AP Statistics **(Junior-Senior)**

The purpose of the AP Statistics course is to introduce students to the major concepts and tools for collecting, analyzing and drawing conclusions from data. Students are exposed to four broad conceptual themes: **1. Exploring Data: Describing patterns and departures from patterns 2. Sampling and Experimentation: Planning and conducting a study 3. Anticipating Patterns: Exploring random phenomena using probability and simulation 4. Statistical Inference: Estimating population parameters and testing hypotheses.** Students who successfully complete the course and exam may receive credit, advanced placement or both for a one-semester introductory college statistics course. A TI-84 graphing calculator is required for this course. (1 credit) Prerequisite: B or better in Algebra II/Trigonometry