Township of Union Public Schools
Department of Mathematics

MATHEMATICS DEPARTMENT CURRICULUM OFFERINGS

HONORS AND ADVANCED PLACEMENT COURSES
- MA280   HONORS GEOMETRY
- MA380   HONORS ALGEBRA II / TRIGONOMETRY
- MA415   ADVANCED MATH
- MA450   STATISTICS
- MA480   AP CALCULUS
- MA550   AP STATISTICS

COLLEGE PREPARATORY COURSES
- MA100   ALGEBRA I
- MA202   GEOMETRY
- MA310   ALGEBRA II
- MA402   COLLEGE ALGEBRA
- MA412   INTRO TO PRECALCULUS

11TH GRADE MATH
- ♦ MA340   GENERAL MATH 3

12TH GRADE MATH
MA400   MATH READINESS FOR COLLEGE AND CAREERS

MATH APPLICATIONS COURSES (TAKEN AS A SECOND MATH COURSE)
- ♦ MA270   GEOMETRY APPLICATIONS
- ♦ MA370   ALGEBRA II APPLICATIONS

♦ Course does not count as a unit for NCAA Athletic eligibility

HIGH SCHOOL MATHEMATICS REQUIREMENTS

Three years of mathematics are required by the NJ Department of Education. This requirement is met by taking an Algebra I course followed by a Geometry course. The third year requirement can be met by taking various levels and types of courses, including Algebra II and General Math 3.

The program in mathematics is designed to meet the needs of all students. The Mathematics Department screens students for honors and AP course placement annually. Under certain circumstances, two math courses will be taken at the same time. Applications courses may be assigned as a second mathematics course for those students who could benefit from participation in a supporting math course.

ADVANCED PLACEMENT COURSES
AP Calculus & AP Statistics

PROJECT ACCELERATION

Seton Hall University recognizes the AP Calculus course offered to seniors as the equivalent of one semester of Calculus at the college level. Four credits will be granted by Seton Hall to a student who successfully completes the program.

MA-100   ALGEBRA I
Enrollment: Grades 9 - 12
All high school students must pass Algebra I in order to graduate.
Description: Algebra I will help mathematics students to build a strong conceptual foundation. The focus of the class will be what algebra really is: patterns and functions. The main topics of the class will include equivalence, representation and modeling with variables, linearity, non-linear relationships, and the connections between algebra and geometry, probability, and statistics. The Algebra I course is a double period that promotes conceptual understanding, student-centered activities, and applications to real life.

MA-202 GEOMETRY
Enrollment: Grades 9 - 12
Prerequisite: Algebra I
All high school students must pass Geometry in order to graduate.
Description: This course includes the topics: the language of geometry, reasoning and introduction to proof, parallels, congruent triangles and quadrilaterals. Scientific calculators will be used throughout the course. This course continues with the study of similar figures, right triangles, trigonometry, circles, probability and statistics, polygons and their areas, surface area and volume of prisms, pyramids, cylinders, cones, and spheres.

♦MA-270   GEOMETRY APPLICATIONS
Enrollment: Students enrolled in Geometry who have a low Algebra I grade, low math standardized test scores, and/or teacher recommendation will also be enrolled in Geometry Applications.
Prerequisite: Taken along with Geometry
Description: Geometry Applications is an elective which offers credit towards graduation, but does not serve towards satisfying the state's mandated three years of mathematics. Geometry Applications students will focus on reasoning about two and three dimensional figures and their properties. Students will be utilizing ALEKS, a computer program, to practice and reinforce skills learned in Geometry.

MA-280   HONORS GEOMETRY
Enrollment: Grades 9-10
Prerequisite: Algebra I and must meet honors criteria
Description: Topics included are an overview of geometry, reasoning, lines in a plane, congruent triangles, properties of triangles, and polygons. Constructions as well as computer applications are included.
This is the second half of the course in honors geometry. Topics included are transformations, similarity, right triangles, circles, planar and space measurements, statistics and probability. In addition, constructions are included, as well as appropriate computer applications. A math related reading and writing project completes the course.

MA-310   ALGEBRA II
Enrollment: Grades 10-12
Prerequisite: Geometry
Description: This course includes the study of real numbers, equations and inequalities, linear equations and functions, polynomials, rational expressions, and data analysis. The second half of the course includes the following topics: rational expressions, radical expressions, quadratic equations, and functions, polynomial equations and complex numbers, exponential and logarithmic functions and conic sections. The graphing calculator will be used.

♦MA- 340   GENERAL MATH 3
Enrollment: Grade 11
Description: The purpose of this course is to provide a third year mathematics course to serve as a bridge to prepare students to be successful in Algebra II or in a post-secondary career. This course will provide instruction in general mathematical concepts and skills needed to recognize, formulate and solve problems arising from mathematical situations and every day experiences.

♦MA-370   ALGEBRA II APPLICATIONS
Enrollment: Students enrolled in Algebra II who have low previous mathematics course grades, low math standardized test scores, and/or teacher recommendation will also be enrolled in Algebra II Applications.
Prerequisite: Taken along with Algebra II
Description: Algebra II Applications is an elective which offers credit towards graduation, but does not serve towards satisfying the state's mandated three years of mathematics. Algebra II Applications students will focus on reasoning about two and three dimensional figures and their properties. Students will be utilizing ALEKS, a computer program, to practice and reinforce skills learned in Algebra II.

MA-380   HONORS ALGEBRA II/TRIGONOMETRY
Enrollment: Grades 10-11
Prerequisite: Geometry and must meet honors criteria
Description: This course covers a review of basic properties, linear functions and relations, systems of linear equations, inequalities, polynomials, and rational expressions, radical expressions, quadratic equations and functions, polynomial equations, and complex numbers. The graphing calculator will be used.
The second half of the course covers exponential and logarithmic functions, sequences and series, a review of the coordinate plane, and systems of quadratic equations, and probability and statistics. In addition, trigonometric and circular functions and trigonometric identities will be studied. The graphing calculator will be used.

MA-400   MATH READINESS FOR COLLEGE AND CAREERS
Enrollment: Grade 12
Description: This course will discuss mathematical topics that prepare students to be successful in an entry level college mathematics course or the work force. Guest speakers from different careers will speak to students, and commonly used programs, such as Microsoft Excel, will be utilized to help solve real-life situations. Topics discussed include number sense, algebra, geometry, and financial literacy.

MA-402   COLLEGE ALGEBRA
Enrollment: Grades 11-12
Prerequisite: Algebra II
Description: This course is designed to provide students with a working knowledge of basic number sense, algebraic concepts, trigonometric concepts, analytic geometry, and technological skills that are necessary to be successful in college level math courses as well as on the college placement exams. Students will apply their reasoning abilities when recognizing patterns, making generalizations, and drawing local conclusions. Students will use these skills in other disciplines and in real-life situations.

MA-412   INTRO TO PRECALCULUS
Enrollment: Grades 11-12
Prerequisite: Course grade of C or better in Algebra II
Description: This course will prepare students for college level precalculus course. The course is divided into two units covering the traditional skills and concepts required for advancement into pre-calculus in a rigorous college preparatory program. Students will model and solve algebraic problems that involve the study of linear, polynomial, quadratic, radical and logarithmic functions. Students will model and solve basic trigonometry, trigonometric identities, equations and application problems. Each unit will include the use of group exploration and technology to study real world problems and problem-solving techniques.

MA-415   ADVANCED MATH
Enrollment: Grades 11-12
Prerequisite: Algebra II and must meet honors criteria
Description: The first half of the course includes the study of trigonometry, functions, including linear, polynomial, rational, exponential, and logarithmic. The graphing calculator will be used throughout the course.
The second half of the course courses includes the study of discrete math, sequences, probability and statistics, conics, parametric equations, polar coordinates, limits, and an introduction to calculus. The graphing calculator will be used throughout the course.

MA-450   STATISTICS
Enrollment: Grades 11-12
Pre-requisite: Geometry and must meet honors criteria
Description: This course will provide students with a working knowledge of probability and statistics, preparing students for college level course work in the social and health and business studies. Students will analyze and interpret data in real life situations.

MA-480   AP CALCULUS
Enrollment: Grade 12
Prerequisite: Honors Algebra II/Trig or Advanced Math and must meet honors criteria
Description: This first of the course is designed to provide students with a foundation in those topics of Calculus that are relevant to many different areas. It begins with the real number system and includes functions, limits, and differentiation and its applications.
During the second half of the year, the topic of integration is covered using various applications. Topics in trigonometry and analytic geometry are also covered.

MA-550   AP STATISTICS
Enrollment: Grades 11-12
Pre-requisite: Geometry and must meet honors criteria
Description: This course will introduce students to the major concepts and tools for collecting, analyzing and drawing conclusions from data. At the advanced level, students will be exposed to four broad themes: exploring data, sampling and experimentation, anticipating patterns, and statistical interference.