

# MATHEMATICS DEPARTMENT Senior High School



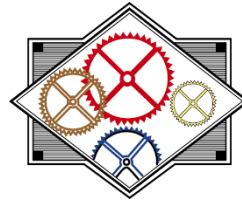
Arts &  
Communications



Business, Management  
Marketing & Technology



Health  
Science



Engineering/Manufacturing  
& Industrial Technology



Human  
Services



Natural Resources  
& Agriscience

VPAA – Meets Visual, Performing & Applied Arts Requirement

OLE – Partially Meets Online Learning Experience Requirement

GR/MMC – Meets Graduation Requirements based on Michigan Merit Curriculum

SMR – Senior Math Related

21F – Course Available through Section 21F: Expanded Virtual Learning

C – Commitment Form

\*CAREER ZONES - Broad groupings of careers that share similar characteristics and whose employment requirements call for many common interests, strengths, and competencies.

Students will engage in problem-solving, reasoning, and critical thinking throughout the course and use appropriate technology to enhance their learning.

Placement in advanced courses is based on criteria established by Utica Community Schools.

## **GEOMETRY** (GR/MMC/OLE) (21F) – E110

9, 10, 11, 12

1.0 credit

The following topics are explored in this course: Basics of Geometry, Reasoning and Proofs, Parallel and Perpendicular Lines, Congruent Triangle Relationships, Quadrilaterals, Polygons, Similarity, Right Triangles, Trigonometry, Circles, Circumference and Area, Surface Area and Volume, Probability.

\*Course content may address skills pertaining to these potential Career Zones: *Engineering, Manufacturing & Industrial Technology*

## **ALGEBRA I** (GR/MMC/OLE) (21F) – E090

9,10,11,12

1.0 credit

The following topics are explored in this course: linear, quadratic, polynomial, exponential, rational and irrational numbers, data analysis including center, data distribution, and topics in bivariate data.

\*Course content may address skills pertaining to these potential Career Zones: *Engineering, Manufacturing & Industrial Technology*

<b>ALGEBRA II</b> (GR/MMC/OLE) (21F) – E120	9, 10, 11, 12	1.0 credit
The following topics are explored in this course: further exploration of functions from Algebra I, complex numbers, rational expressions, rational and radical functions, inverses of functions, logarithms and logarithmic functions, trigonometric functions, data analysis including normal distributions, simple and conditional probability.		
<i>*Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing &amp; Industrial Technology</i>		
<b>ACCELERATED ALGEBRA II</b> (GR/MMC/ OLE/C) – E130	9, 10, 11	1.0 credit
The following topics are explored in this course: further exploration of functions from Algebra I, complex numbers, rational expressions, rational and radical functions, inverses of functions, logarithms and logarithmic functions, trigonometric functions, data analysis including normal distributions, simple and conditional probability.		
<i>*Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing &amp; Industrial Technology</i>		
<b>ALGEBRA II EXTENDED</b> (GR/MMC/OLE) – E122	11,12	1.0 credit
The following topics are explored in this course: further exploration of functions from Algebra I, complex numbers, rational expressions, rational and radical functions, inverses of functions, logarithms and logarithmic functions, trigonometric functions. NOTE: In order to take this course students <b>must</b> also take the one semester course of Probability and Statistics after this course to fulfill the mathematical requirements of the state of Michigan.		
<i>*Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing &amp; Industrial Technology</i>		
<b>BUSINESS MATHEMATICS</b> (GR/MMC/SMR/OLE) – E135	12	0.5 credit
The following topics are explored in this course: review of operations with rational numbers, percentages, and math involved in retail transactions, careers, personal finance, insurance, taxes, and interest.		
<i>*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing &amp; Technology; Engineering, Manufacturing &amp; Industrial Technology</i>		
<b>PRECALCULUS</b> (GR/MMC/SMR) (21F) - E155	10, 11, 12	1.0 credit
PREREQUISITE: Algebra II or Accelerated Algebra II		
The following topics are explored in this course: Functions and their Graphs, Polynomial and Rational Functions, Exponential and Logarithmic Functions, Trigonometry, Analytical Trigonometry, Sequences and Series, and Topics in Analytical Geometry.		
<i>*Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing &amp; Industrial Technology</i>		
<b>AP PRECALCULUS</b> (GR/MMC/SMR/C) - E158	10, 11, 12	1.0 credit
PREREQUISITE: Algebra II or Accelerated Algebra II		
The following topics are explored in this course: Polynomial, Rational, Exponential, Logarithmic, Trigonometric, and Polar Functions, Functions Involving Parameters, Vectors, and Matrices. Within these topics emphasis is placed on procedural and symbolic fluency, multiple representation of the functions, and communication and reasoning.		
<i>*Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing &amp; Industrial Technology</i>		

**ADVANCED PLACEMENT CALCULUS AB** (GR/MMC/SMR/C) (21F) – E161 11, 12 1.0 credit

PREREQUISITE: Precalculus or AP Precalculus

The following topics are explored in this course: Limits, Continuity, Differentiation, Integration, Differential Equations, Contextual and Analytical Applications of Differentiation and Integration. Within these topics, emphasis is placed on implementing Mathematical Processes, Connecting Representation, Justification, Communication and Notation.

*\*Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing & Industrial Technology*

**ADVANCED PLACEMENT CALCULUS BC** (GR/MMC/SMR/OLE/C) (21F) – E162 11, 12 1.0 credit

PREREQUISITE: Precalculus or AP Precalculus

The following topics are explored in this course: Limits, Continuity, Differentiation, Integration, Differential Equations, Contextual and Analytical Applications of Differentiation and Integration, Parametric Equations, Polar Coordinates, and Vector-Valued Functions, Infinite Sequences and Series. Within these topics, emphasis is placed on implementing Mathematical Processes, Connecting Representation, Justification, Communication and Notation.

*\*Course content may address skills pertaining to these potential Career Zones: Engineering, Manufacturing & Industrial Technology*

**PROBABILITY AND STATISTICS** (GR/MMC/SMR/OLE) (21F) – E300 10, 11, 12 0.5 credit

If students take Algebra 2 Extended, they must also take this course to fulfill the mathematical requirements established by the State of Michigan. The following topics are included in this course: interpreting categorical and quantitative data, making inferences and justifying conclusions using random processes and statistical experiments, conditional probability, rules of probability, using probability to make decisions.

*\*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing & Technology; Engineering, Manufacturing & Industrial Technology*

**AP STATISTICS** (GR/MMC/SMR/OLE/C) (21F) – E310 10, 11, 12 1.0 credit

PREREQUISITE: Algebra II

The following topics are explored in this course: Exploring One- and Two- Variable Data, Collecting Data, Probability, Random Variables, and Probability Distribution, Sampling Distributions, Inference for Categorical Data: Proportions, Inference for Quantitative Data: Means, Inference for Categorical Data: Chi-Square, Inference for Quantitative Data: Slopes

*\*Course content may address skills pertaining to these potential Career Zones: Business, Management, Marketing & Technology; Engineering, Manufacturing & Industrial Technology*