

University at Buffalo
GIFTED MATH PROGRAM

2016-17 Short Description of Courses

GMP-I

Grade 7

GSE-120: INTRODUCTION TO LOGIC

1 College Credit (*optional*)

Development of the formal language of logic, demonstrations including use of the deduction theorem and indirect inference, the propositional calculus, and quantifiers.

GMP-II

Grade 8

GSE-121: LOGIC AND SETS

2 College Credits (*optional*)

Formal set theory with finite and infinite sets, classes of sets, equivalence, cardinality and proof.

GMP-III

Grade 9

GSE-122: ANALYTIC AND TRANSFORMATIONAL GEOMETRY

1 College Credit (*optional*)

Transformations, symmetry, Fundamental Theorems of Isometries, algebra of transformations, transformation groups, conic sections, analytic geometry proofs and applications.

GMP-IV

Grade 10

GSE-123: RELATIONS AND FUNCTIONS

2 College Credits (*optional*)

Sequences and series, limits, polynomials, exponential and logarithmic functions, circular functions and trigonometry, complex numbers, vectors.

GMP-V

Grade 11

MTH-141: COLLEGE CALCULUS I

4 College Credits (*optional*) -- Fall only

Differentiation and integration with applications.

MTH-142: COLLEGE CALCULUS II

4 College Credits (*optional*) -- Spring only and must pass College Calculus I

Differentiation and integration of transcendental functions, infinite sequences, series and power series, methods of integration, additional topics in analytic geometry.

GMP-VI

Grade 12

MTH-241: COLLEGE CALCULUS III

4 College Credits (*optional*) -- Fall only and must pass College Calculus II

Geometry and vectors of n -dimensional space, Green's Theorem, Stokes' Theorem, multidimensional differentiation and integration, application to two and three-dimensional space.

MTH-309: INTRODUCTION TO LINEAR ALGEBRA

4 College Credits (*optional*) -- Spring only and must pass College Calculus II

Linear equations, linear transformations, matrices, determinants, vector spaces, eigenvalues and eigenvectors, inner products, orthogonality, quadratic forms.