

# MATHEMATICS

## COURSES OFFERED

### Grade 9, 10, 11, 12

PSSA Mathematics Preparation # 3001

### Grade 9

Essentials of Algebra I/Geometry (IMPACT) # 3333

Essentials of Algebra I/Geometry # 3301

Academic Algebra I # 3101

Honors Algebra 2 # 3202

Academic Algebra 2 # 3103

Honors Geometry # 3201

Academic Geometry # 3102

Computer Math A # 3523

Honors Pre-Calculus # 3421

### Grade 10

Essentials of Geometry (IMPACT) # 3334

Essentials of Geometry # 3302

Honors Algebra 2 # 3202

Academic Algebra 2 # 3103

Computer Math A # 3523

Honors Pre-Calculus # 3421

Honors Calculus # 3422

AP Calculus (Level AB) # 3012

AP Calculus (Level BC) # 3022

Math 4 with Trigonometry # 3911

*Course list continues on the following page.*

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**Grade 11**

Exploratory Mathematics	# 3511
Personal Finance	# 3411
Essentials of Integrated Math - Part 3	# 3533
Essentials of Integrated Math - Part 4	# 3534
Integrated Mathematics 3	# 3623
Math 4 with Trigonometry	# 3911
Introduction to Probability & Statistics	# 3812
AP Statistics	# 3014
Honors Pre-Calculus	# 3421
Honors Calculus	# 3422
AP Calculus (Level AB)	# 3012
AP Calculus (Level BC)	# 3022
Computer Math A	# 3523
Computer Math B	# 3524
AP Computer Science (Level A)	# 3011

**Grade 12**

Exploratory Mathematics	# 3511
Personal Finance	# 3411
Essentials of Integrated Math - Part 3	# 3533
Essentials of Integrated Math - Part 4	# 3534
Integrated Mathematics 3	# 3623
Elements of Trig with Functions	# 3624
Introduction to Probability and Statistics	# 3812
AP Statistics	# 3014
Math 5	# 3912
Honors Calculus	# 3422
AP Calculus (Level AB)	# 3012
AP Calculus (Level BC)	# 3022
Computer Math A	# 3523
Computer Math B	# 3524
AP Computer Science (Level A)	# 3011

**Grade 9, 10, 11, 12 Course Selection****PSSA MATHEMATICS PREPARATION****Full Year/Part Time****No. 3001****Grades 9, 10, 11, 12****Credit 0.5**

This course is designed to prepare students to achieve at the proficient or advanced level on the mathematics portion of the PSSA examination at the 11<sup>th</sup> grade level. Students will utilize a variety of resources, such as Study Island, 4SIGHT Benchmark Assessments, PSSA preparation workbooks, and the North Allegheny Mathematics curriculum to review and to be introduced to concepts being tested on the PSSA. The topics covered will reinforce and supplement what the students are learning in their core mathematics courses and align these concepts with the eligible contents that will be assessed on the PSSA. Students will be given the opportunity to gauge their progress and predict their success on the PSSA by using the 4SIGHT Benchmark Assessments along with other assessments. Students may test out of the course if they achieve a proficient score on equivalency tests given at the end of the first semester and at the end of the school year.

**Criteria for Selection -**

Scoring at the Basic or Below Basic level on the most recent Mathematics portion of the PSSA exam.

**Grade 9 Course Selections****ESSENTIALS OF ALGEBRA I/GEOMETRY (IMPACT)****Full Year/Full Time****No. 3333****Grade 9****Credit 1.0**

This is the second of the Essentials Math sequence. The Algebra strand of this course includes topics on quadratic equations, functions, polynomials, factoring, rational expressions, rational equations, radicals, and connections to Geometry. The Geometry strand will cover properties of segments, properties of angles, and properties of parallel and perpendicular lines. Essentials of Algebra I/Geometry provides instruction and practice on standardized test questions in a variety of formats including multiple-choice, short response, and extended response. Technology support for both learning Algebra and/or Geometry and preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

**Criteria for Selection -**

1. Acceptance into the IMPACT Program
2. Based upon criteria demonstrated by the student during the 8<sup>th</sup> grade year with grades, diagnostic testing, study habits, and standardized scores, students will qualify for placement.

**ESSENTIALS OF ALGEBRA I/GEOMETRY****Full Year/Full Time****No. 3301****Grade 9****Credit 1.0**

This is the second of the Essentials Math sequence. The Algebra strand of this course includes topics on quadratic equations, functions, polynomials, factoring, rational expressions, rational equations, radicals, and connections to Geometry. The Geometry strand will cover properties of segments, properties of angles, and properties of parallel and perpendicular lines. Essentials of Algebra I/Geometry provides instruction and practice on standardized test questions

in a variety of formats including multiple-choice, short response, and extended response. Technology support for both learning Algebra and/or Geometry and preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

**Criteria for Selection -**

1. Based upon criteria demonstrated by the student during the 8<sup>th</sup> grade year with grades, diagnostic testing, study habits and standardized scores, students will qualify for placement.

**ACADEMIC ALGEBRA I****No. 3101****Full Year/Full Time****Grades 9****Credit 1.0**

Academic Algebra I is the first formally structured course of the Academic sequence. The content is organized around families of functions, with special emphasis on linear and quadratic functions, along with representing functions in multiple ways through real-world situations. In addition to its Algebra content, the course offers lessons on probability and data analysis as well as numerous examples and exercises involving Geometry. Algebra I provides instruction and practice on standardized test questions in a variety of formats including multiple choice, short response, and extended response. Technology support for both learning Algebra and for preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

**Criteria for Selection -**

1. An 'A' (90%) or better in Essentials of Algebra I AND a teacher recommendation (Prior to grade 9).

**HONORS ALGEBRA 2****No. 3202****Grade 9 (listed in Grade 10 section for description)****ACADEMIC ALGEBRA 2****No. 3103****Grade 9 (listed in Grade 10 section for description)****HONORS GEOMETRY****No. 3201****Full Year/Full Time****Grade 9****Honors Wt.****Credit 1.0**

This is a rigorous course for students who had Advanced Algebra I in grades 6, 7, or 8. This is the second year of an honors mathematics sequence. In this course, students will develop reasoning and problem-solving skills in the areas of congruence, similarity, properties of lines, properties of triangles, properties of quadrilaterals, and properties of circles. The course will also include work with perimeter, area, circumference, surface area, and volume to solve real-world problems. In addition to the Geometry content, this course includes numerous examples and exercises involving Algebra, data-analysis, and probability. Honors Geometry provides instruction and practice on standardized test questions in a variety of formats including multiple choice, short response, and extended response. Technology support for both learning Geometry and for preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

The Advanced/Honors Mathematics courses are intended to be more challenging than Academic courses and

are designed to provide multiple opportunities for students to take an increased responsibility for their own learning and achievement. These courses are designed for students who have demonstrated an advanced level of achievement in mathematics. The curriculum is distinguished by a difference in rigor and the quality of work, not merely the quantity.

**Criteria for Selection -**

1. A 'B' (80%) or better in Advanced Algebra I (Prior to grade 9).
2. A 95% or better OR a teacher recommendation in Academic Algebra I (Prior to grade 9).

**ACADEMIC GEOMETRY**

**No. 3102**

**Full Year/Full Time**

**Grade 9**

**Credit 1.0**

This is the second course of the Academic Mathematics sequence. In this course, students will develop reasoning and problem-solving skills in the areas of congruence, similarity, properties of lines, properties of triangles, properties of quadrilaterals, and properties of circles. The course will also include work with perimeter, area, circumference, surface area, and volume to solve real-world problems. In addition to the Geometry content, this course includes numerous examples and exercises involving Algebra, data-analysis, and probability. Academic Geometry provides instruction and practice on standardized test questions in a variety of formats including multiple-choice, short response, and extended response. Technology support for both learning Geometry and for preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

**Criteria for Selection -**

A 'C' (70%) or better in Academic Algebra I. Students with less than a 'C' in Academic Algebra I will be recommended to repeat Academic Algebra I at the high school level.

**COMPUTER MATH A**

**No. 3523**

**Grade 9** (listed at end of Math section for description)

**HONORS PRECALCULUS**

**No. 3421**

**Grade 9** (listed in Grade 11 section for description)

**Grade 10 Course Selections**

**ESSENTIALS OF GEOMETRY (IMPACT) No. 3334**

**Full Year/Full Time**

**Grade 10**

**Credit 1.0**

This is the third course of the Essentials Math sequence. The Geometry strand of this course includes topics on parallel and perpendicular lines, triangles, quadrilaterals, similarity, polygons, area, surface area, and volume. The Trigonometry strand will cover square roots, special right triangle relationships, trigonometric ratios, and circles. Essentials of Geometry provides instruction and practice on standardized test questions in a variety of formats including multiple choice, short response, and extended response. Technology support for both learning Geometry and preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

**Criteria for Selection -**

1. Acceptance into the IMPACT Program.
2. A 'D' (60%) or better in Essentials of Algebra 1/Geometry.

**ESSENTIALS OF GEOMETRY**

**No. 3302**

**Full Year/Full Time**

**Grade 10**

**Credit 1.0**

This is the third course of the Essentials Math sequence. The Geometry strand of this course includes topics on parallel and perpendicular lines, triangles, quadrilaterals, similarity, polygons, area, surface area, and volume. The trigonometry strand will cover square roots, special right triangle relationships, trigonometric ratios, and circles. Essentials of Geometry provides instruction and practice on standardized test questions in a variety of formats including multiple choice, short response, and extended response. Technology support for both learning Geometry and preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

**Criteria for Selection -**

A 'D' (60%) or better in Essentials of Algebra 1/Geometry.

**HONORS ALGEBRA 2**

**No. 3202**

**Full Year/Full Time**

**Honors Wt.**

**Grades 9, 10**

**Credit 1.0**

This is a rigorous course for students who had Honors Geometry in grades 7, 8, or 9. This is the third year of an honors mathematics sequence. The content of this course is organized around families of functions, including linear, quadratic, exponential, logarithmic, radical, and rational functions. Students will also learn to model real-world situations using functions. In addition to its algebra content, Honors Algebra 2 includes topics on probability, data analysis, geometry, and trigonometry. Honors Algebra 2 provides instruction and practice on standardized test questions in a variety of formats including multiple choice, short response, and extended response. Technology support for both learning Algebra 2 and for preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

The Advanced/Honors Mathematics courses are intended to be more challenging than Academic courses and are designed to provide multiple opportunities for students to take an increased responsibility for their own learning and achievement. These courses are designed for students who have demonstrated an advanced level of achievement in mathematics. The curriculum is distinguished by a difference in rigor and the quality of work, not merely the quantity.

**Criteria for Selection -**

1. A 'B' (80%) or better in Honors Geometry.
2. A 95% or better in Academic Geometry OR a teacher's recommendation from Academic Geometry.

**ACADEMIC ALGEBRA 2** No. 3103  
**Full Year/Full Time**  
**Grades 9, 10** Credit 1.0

This is the third year of the Academic Mathematics sequence. The content of this course is organized around families of functions, including linear, quadratic, exponential, logarithmic, radical, and rational functions. Students will also learn to model real-world situations using functions. In addition to its algebra content, Academic Algebra 2 includes topics on probability, data analysis, geometry, and trigonometry. Academic Algebra 2 provides instruction and practice on standardized test questions in a variety of formats including multiple-choice, short response, and extended response. Technology support for both learning Algebra 2 and for preparing for standardized tests is available at [www.classzone.com](http://www.classzone.com).

**Criteria for Selection -**

A 'D' (60%) or better in Academic Geometry.

*NOTE: Students with less than a 'B' in Honors Geometry will be recommended for Academic Algebra 2.*

**COMPUTER MATH A** No. 3523  
**Grade 10 (listed at end of Math section)**

**HONORS PRE-CALCULUS** No. 3421  
**Grade 10 (listed under Grade 11 section)**

**HONORS CALCULUS** No. 3422  
**Full Year/Full Time**  
**Grade 10 (listed under Grade 12)**

**AP CALCULUS AB** No. 3012  
**Grade 10 (listed under Grade 12)**

**AP CALCULUS BC** No. 3022  
**Grade 10 (listed under Grade 12)**

**MATH 4 WITH TRIGONOMETRY** No. 3911  
**Grade 10 (listed under Grade 11)**

**Grade 11 Course Selections**

**EXPLORATORY MATHEMATICS** No. 3511  
**Full Year/Full Time**  
**Grades 11, 12** Credit 1.0

This course is developed for those students who plan to take Algebra at the next level but whose mathematics skills require remediation before they can move ahead. This course will help students to build a strong foundation by reteaching and reinforcing the basic mathematics skills and concepts. The content of this course is organized around numbers and operations as well as equations. Students will develop computational, procedural, and problem solving skills to provide a solid foundation for further study in mathematics.

**Criteria for Selection -**

Recommendation of mathematics teacher.

**PERSONAL FINANCE** No. 3411  
**Semester/Full Time**  
**Grades 11, 12** Credit .5

This practical course is designed to empower students to become more responsible consumers and to prepare them to be financially successful in the years ahead. The major topics of the course are as follows: foundation of financial planning; short and long term financial goal writing; an in-depth look at the influence of today's economy; budget preparation and money management; banking and investing; consumer credit; local, state and federal taxes; car buying and financing; home mortgages; protection against identity theft; insurance basics; and the mathematics behind key financial ratios. This course is designed as an elective and is not part of any specific mathematics sequence. By developing a strong background in financial literacy, students will be ready to take control of their own personal success towards a secure future.

**Criteria for Selection -**

Recommendation of mathematics teacher.

**ESSENTIALS OF INTEGRATED MATH - PART 3** No. 3533  
**Full Year/Full Time**  
**Grade 11, 12** Credit 1.0

This is the third course of a four year sequence. The continuation of this sequence through Essentials of Integrated Math - Part 4 (3534) is equivalent to the completion of Integrated Mathematics 1 (3621) and Integrated Mathematics 2 (3622) and a major portion of Integrated Mathematics 3 (3623).

This course continues with materials started in Essentials of Integrated Math - Part 2 and works to complete book 2 and begin working in book 3 of the Integrated Math series.

Topics in this course include graphing quadratic functions, solving equations using square roots and factoring techniques, working with the quadratic formula, coordinate geometry, binomial expansion, probability, and proofs for angles, parallel lines, congruent, and similar triangles.

**Criteria for Selection -**

A 'D' (60%) or better in Essentials of Integrated Math Part 2 (IMPACT) (3332) or a 'D' (60%) or better in Essentials of Integrated Math Part 2 (3352).

**ESSENTIALS OF INTEGRATED MATH - PART 4** No. 3534  
**Full Year/Full Time**  
**Grades 10, 11, 12** Credit 1.0

This is the fourth course of a four year sequence. The completion of this course is equivalent to the completion of Integrated Mathematics 1 (3621) and Integrated Mathematics 2 (3622) and a major portion of Integrated Mathematics 3 (3623).

This course continues with materials started in Essentials of Integrated Math - Part 3 and works through book 3 of the Integrated Mathematics series.

Topics to be included for mastery are work with polynomial functions and exponential functions, comparing proof methods, sequences and series, and problem-solving activi-

ties with skill areas. The use of the TI-82 or TI-83 graphics calculator is included in this course.

**Criteria for Selection -**

A 'D' (60%) or better in Essentials of Integrated Math Part 3 (3353).

**INTEGRATED MATHEMATICS 3**      **No. 3623**  
**Full Year/Full Time**  
**Grades 11, 12**      **Credit 1.0**

This is the third year of an academic mathematics sequence. This course includes working with polynomial functions, exponential functions, trigonometry with triangles and circles, standard deviations, comparing proof methods, limits, sequences and series, and problem-solving activities within these concept areas. The use of the TI-83+/TI-84+ graphics calculator is an important part of this coursework.

At the completion of this course, students should have completed more than the traditional coursework provided by two years of algebra and a year of geometry.

**Criteria for Selection -**

Students taking Integrated 3 as juniors (11th graders) need to have a 'C' (70%) or better in Integrated 2 (3622) or Honors Integrated 2 (3722).

*NOTE: Students with less than a 'C' in Integrated Mathematics 2 will be recommended for Essentials of Integrated Mathematics Part 4 (3534) or to repeat Integrated Mathematics 2.*

**MATH 4 WITH TRIGONOMETRY**      **No. 3911**  
**Full Year/Full Time**  
**Grades 10, 11**      **Credit 1.0**

This is a fourth year mathematics course for the accelerated student, requiring a strong foundation in algebra and geometry. Major emphasis includes the topics of algebraic analysis of curves, functions and graphing techniques, polynomial functions and the circular and trigonometric functions. Math 4 is the first year of a two year Pre-Calculus course. Completion of the course will provide a smooth transition to Math 5 (3912), but will NOT satisfy the prerequisite for Honors Calculus (3422) or AP Calculus (3012, 3022).

**Criteria for Selection -**

1. 'C' (70%) or better in Integrated Math 3 (3623, 3723).
2. Recommendation of the mathematics teacher.

**INTRODUCTION TO  
PROBABILITY AND STATISTICS**      **No. 3812**  
**Semester/Full Time**  
**Grades 11, 12**      **Credit .5**

This course develops the basic tools of probability theory and statistics. Topics studied include counting methods using permutations and combinations, axiomatic probability, descriptive statistics, and statistical inference. Statistical inference topics include parameter estimation, sampling theory, and hypothesis testing. This course provides a smooth transition to statistics needed at the college level. In addition, the student may obtain four college credits through the **University of Pittsburgh College in the High School program**. To obtain this credit, the student must successfully complete the course as specified by the University, and pay the fee charged

by the University.

**Criteria for Selection -**

Successful completion of Integrated Mathematics 3 (3623).

**AP STATISTICS**      **No. 3014**  
**Full Year/Full Time**      **A.P. Wt.**  
**Grades 11, 12**      **Credit 1.0**

This course is devoted to developing the student's ability to interpret and investigate statistical data. The activities of decision making and justifying hypotheses are of the highest importance. The course uses an activity/project oriented approach to develop the concepts.

It will be necessary for each student to have a TI-83/TI-83+ calculator. This calculator will be used to produce, analyze and interpret data.

It is strongly recommended that the student take the AP exam upon completion of this course. The student should have a high level of maturity and interest in mathematics.

**Criteria for Selection -**

1. Recommendation of the mathematics teacher.
2. A 'B' (80%) or better in Honors Pre-Calculus (3421).

**OR**

Successful **completion** of AP Calculus (3012, 3022).

**HONORS PRE-CALCULUS**      **No. 3421**  
**Full Year/Full Time**      **Honors Wt.**  
**Grades 10, 11**      **Credit 1.0**

This is a rigorous course for the accelerated student. It requires a strong foundation in algebra and geometry. Major emphasis is placed on algebraic concepts and analysis of curves, functions, and graphing techniques. This course also contains a study of trigonometry from the circular and right triangle perspective. The analysis of conic sections and other geometric curves from a coordinate point of view is also studied. This is an Honors course which leads to Honors Calculus (3422) or AP Calculus (3012, 3022). Students who experience difficulty in this course have Math 5 (3912) as an option for a fifth year of mathematics. This course IS REQUIRED as a prerequisite for Calculus.

**Criteria for Selection -**

1. 'B' (85%) or better in Honors Integrated Math 3 (3723).
2. Recommendation of mathematics teacher.

**HONORS CALCULUS**      **No. 3422**  
**Full Year/Full Time**  
**Grade 11 (listed under Grade 12)**      **Credit 1.0**

*NOTE: For students taking this course in grade 10 or grade 11, another Calculus course (3012 or 3022) may be taken prior to graduation. For a maximum number of credits earned in Calculus courses not to exceed 2.5 credits.*

**AP CALCULUS AB**      **No. 3012**  
**Grade 11 (listed under Grade 12)**

**AP CALCULUS BC**      **No. 3022**  
**Grade 11 (listed under Grade 12)**

COMPUTER MATH A Grade 11 (listed at end of Math section)	No. 3523
COMPUTER MATH B Grade 11 (listed at end of Math section)	No. 3524
AP COMPUTER SCIENCE Grade 11 (listed at end of Math section)	No. 3011

### Grade 12 Course Selections

EXPLORATORY MATHEMATICS Grade 12 (listed under Grade 11)	No. 3511
PERSONAL FINANCE Grade 12 (listed under Grade 11)	No. 3411
ESSENTIALS OF INTEGRATED MATH PART 3 Grade 12 (listed under Grade 11)	No. 3533
ESSENTIALS OF INTEGRATED MATH PART 4 Grade 12 (listed under Grade 11)	No. 3534
INTEGRATED MATHEMATICS 3 Grade 12 (listed under Grade 11)	No. 3623

ELEMENTS OF TRIGONOMETRY WITH FUNCTIONS Full Year/Full Time Grade 12	No. 3624  <b>Credit 1.0</b>
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This course is an introduction to and application of functions. It includes the analysis and applications of functions such as: linear, higher degree, rational, trigonometric, and transcendental. It is the fourth course in the academic mathematics sequence. The course provides a smooth transition to college mathematics, but is a terminal course in this high school academic sequence.

**Criteria for Selection -**

A 'D' (60%) or better in Integrated Math 3 (3623) or Essentials of Integrated Mathematics-Part IV (3534).

INTRODUCTION TO PROBABILITY AND STATISTICS Grade 12 (listed under Grade 11)	No. 3812
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AP STATISTICS Grade 12 (listed under Grade 11)	No. 3014
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MATH 5 Full Year/Full Time Grades 11, 12	No. 3912  <b>Credit 1.0</b>
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Math 5 is an advanced level mathematics equivalent to a college freshman course. Topics include Trigonometry, Advanced Functions and Graphing, Discrete Mathematics, and an Introduction to Calculus. The development of these topics will explore the connection of these mathematical concepts and the connection to other subject areas.

**Criteria for Selection -**

1. Recommendation of math teacher.
2. A 'C' (70%) or better in Math 4 with Trigonometry (3911).

**OR**

Completion of Honor's Pre-Calculus (3412) with a grade lower than a 'B' (80%).

HONORS CALCULUS Full Year/Full Tim Grade 12	No. 3422  <b>Credit 1.0</b>
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If students have completed four years of honors math with a high level of achievement, they should consider this course. If some difficulty has been encountered in the honors sequence, Math 5 (3912) should be considered as an option. Borderline cases should consult their math teacher for aid. Challenging for the able student, Honors Calculus meets many of the requirements for an advanced placement course. Students with a high level of achievement may elect to take the Advanced Placement test for college credit with additional work outside of class. The same basic course as **Course 3012** but the students will not be expected to take the AP exam and the pace will be slower.

In addition, the student may obtain four college credits through the University of Pittsburgh College in High School program. To obtain this credit, the student must successfully complete the course as specified by the University, and pay the fee charged by the University.

**Criteria for Selection -**

1. Recommendation of math teacher.
2. A 'B' (80%) or better in Honors Pre-Calculus (3421).

**NOTE:** For students taking this course in grade 10 or grade 11, another Calculus course (3012 or 3022) may be taken prior to graduation. For a maximum number of credits earned in Calculus courses not to exceed 2.5 credits.

AP CALCULUS AB Full Year/Full Time Grade 12	No. 3012  A.P. Wt. <b>Credit 1.0</b>
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This course, in sequence with Honors Pre-Calculus Math (3421), will enable the student to take the AP exam (AB) for college credit and/or placement. Because of the rigor and fast pace, only those students with a high level of achievement in previous math courses and the recommendation of the Pre-Calculus Math teacher will be accepted.

The course will cover elementary functions, limits, derivatives of algebraic and transcendental functions, and basic integration with some application to area and volume.

This course differs from course AP Calculus BC (3022) in that it is somewhat less rigorous, and because it meets only five periods per week, involves less homework and covers less material.

**Criteria for Selection -**

1. Recommendation of math teacher.
2. An 'A' (90%) or better in Honors Pre-Calculus.

**NOTE:** For students taking this course in grades 10, 11 or 12, another Calculus course may have already been taken prior to this (3422) or (3022) may be taken after this. For a maximum number of credits earned in Calculus not to exceed 2.5 credits.

**AP CALCULUS BC**  
**Full Year/Full Time**  
**Grade 11, 12**

**No. 3022**  
**A.P. Wt.**  
**Credit 1.5**

This course in sequence with Honors Pre-Calculus Math (3421), will enable the student to take the AP Exam (Level BC) for college credit and/or placement. Because of the rigor and fast pace, only those students with the highest level of achievement in previous math courses and the recommendation of their Honors Pre-Calculus Math teacher will be accepted.

The course will cover elementary vector, and parametric functions, rigorous definitions of limits, derivatives of algebraic, transcendental, vector and parametric functions, integration involving area, volume, trigonometric substitution and integration by parts and by partial fractions, and sequences and series.

This course differs from course AP Calculus AB (3012) in that it meets seven periods per week, carries 1.5 credits, moves at a faster pace, is more rigorous, and involves more homework.

**Criteria for Selection -**

1. Recommendation of math teacher.
2. An 'A' (90%) or better in Honors Pre-Calculus Math (3421).

**NOTE:** For students taking this course in grade 11 or grade 12, another Calculus course (3422, 3012) may have already been taken. For a maximum number of credits earned in Calculus not to exceed 2.5 credits.

**Grade 12 Course Selections**

**COMPUTER MATHEMATICS A**  
**Semester/Full time**  
**Grades 10, 11, 12**

**No. 3523**  
**Credit .5**

Computer Mathematics A is a one semester course designed to be the student's first experience in structured programming. The student will learn to use top-down design and step-wise refinement in designing programs using an appropriate programming language. The course will concentrate on problem-solving applied to familiar topics from mathematics, science, and business. It is essential that students have a grade of 'C' or better in previous math courses. The programming language used in this course is C++. The software Alice, a three dimensional animation package, will also be used to emphasize the implementation of objects by creating animations.

**Criteria for Selection -**

1. Successful completion of Academic Algebra 1 (3101) and a co-requisite of Integrated Mathematics 2 (3622, 3722) or successful completion of Essentials of Integrated Mathematics 2 (3532) and a co-requisite of Essentials of Integrated Mathematics 3 (3533).

**COMPUTER MATHEMATICS B**  
**Semester/Full Time**  
**Grades 11, 12**

**No. 3524**  
**Credit .5**

The major emphasis in this course is on extending the student's proficiency in programming methodology and understanding of algorithms and data structures. The implementation of this extension will be accomplished using an

appropriate programming language. The high-level structured nature of the programming language will be utilized to develop solutions to problems by applying top-down design and modular programming methods. The topics and algorithms learned provide an excellent background for taking AP Computer Science (3011). The programming language used in this course is C++. The software Alice, a three dimensional animation package, will also be used to emphasize the implementation of objects by creating animations.

**Criteria for Selection -**

1. Recommendation of Computer Math A teacher.
2. A 'C' (70%) or better in Computer Math A (3523).

**AP COMPUTER SCIENCE (Level A) No. 3011**

**Full Year/Full Time**  
**Grades 11, 12**

**A.P. Wt.**  
**Credit 1.0**

Advanced Placement Computer Science (Level A) is an introductory course in computer science focusing on Object Orientation. A large part of the course is built around the development of computer programs that are understandable, adaptable and when appropriate, reusable. In addition, an extensive library, packages for developing GUI (graphical user interface) applets, multiple classes and methods make Java very suitable for the Internet. The software Alice, a three dimensional animation package, will also be used to emphasize the implementation of objects by creating animations. Programs are used in the development of algorithms, the development and use of fundamental data structures and real-world applications. A Case Study, large real-world program, is included as part of the AP curriculum. In addition, an understanding of the basic hardware and software components of computer systems and the responsible use of these systems are integral parts of the course. The programming language used in this course is Java.

**Criteria for Selection -**

1. This course is recommended only for students who have completed Computer Math A (3523) with a grade of 'B' (80%) or better.

**OR**

Successful completion of AP Calculus provided that the student has adequate programming knowledge. Completion of Computer Math B (3524) is strongly recommended.

**ALONG WITH**

2. Recommendation of computer/mathematics teacher.

## MATHEMATICS PHASE SEQUENCE CHART

\* Note: At the end of the 2008-2009 school year, the phase-out of the Integrated Math program will be complete.

*Needed for graduation - 3 math credits.*

*Students should consult with their teachers for best option.*

<u>2007-2008</u> 8 <sup>th</sup> Grade →	<u>2008-2009</u> 9 <sup>th</sup> Grade	<u>2007-2008</u> 9 <sup>th</sup> Grade →	<u>2008-2009</u> 10 <sup>th</sup> Grade	<u>2007-2008</u> 10 <sup>th</sup> Grade →	<u>2008-2009</u> 11 <sup>th</sup> Grade	<u>2007-2008</u> 11 <sup>th</sup> Grade →	<u>2008-2009</u> 12 <sup>th</sup> Grade	
Integrated 3 (H.T.)	Honors Pre-Calc	Honors Pre-Calc	AP Calc BC	AP Calc BC	Math Elective	Math Elective	Math Elective	
			AP Calc AB					
			Honors Calc					
			Math Elective					
Honors Geometry	Honors Algebra 2	Honors Integrated 3	Honors Pre-Calc	AP Calc AB	Math Elective	AP Calc BC	Math Elective	
			Math 4		AP Calc BC			
			Math Elective					
Advanced Algebra 1 (8M4)	Honors Geometry	Honors Geometry	Honors Algebra 2	Honors Calc	AP Calc BC	AP Calc AB	AP Calc BC	
					Math Elective			Math Elective
Academic Algebra 1 (8M3)	Academic Geometry	Academic Geometry	Academic Algebra 2	Honors Pre-Calc	AP Calc BC	Honors Calc	AP Calc BC	
					AP Calc AB			
					Honors Calc			Math Elective
					Math Elective			
Parochial School Transfer Students, or students that need to repeat Algebra 1	Academic Algebra 1	Academic Algebra 1	Academic Geometry	Math 4	Math 5	Honors Pre-Calc	AP Calc BC	
					Math Elective			AP Calc AB
								Math Elective
Essentials of Algebra 1 (8M2)	Essentials of Algebra 1/ Geometry	Essentials of Algebra 1/ Geometry	Essentials of Geometry	Honors Integrated 3	Honors Pre-Calc	Math 5	AP Calc BC	
					Math 4			AP Calc AB
					Math Elective			Honors Calc
				Integrated 2	Integrated 3	Math 4	Math 5	
							Math Elective	
				Essentials of Integrated 2	Essentials of Integrated 3	Integrated 3	Honors Pre- Calc	
							Trigonometry	
							Math Elective	
						Essentials of Integrated 3	Integrated 3	
							Essentials of Integrated 4	
							Math Elective	

*Math Electives include: Personal Finance, Computer Math A, Computer Math B,  
AP Computer Science, AP Statistics, and Introduction to Probability and Statistics.*