

## MATHEMATICS

### Course Guide - Huron & Pioneer

COURSE #	COURSE	TERM	GRADE LEVEL	PREREQUISITE
03421, 03422	<b><u>Math Analysis 1AC, 2AC</u></b>	Semester	11	03331/03332 Advanced Algebra 3AC, 4AC or demonstrated success in 03322 Algebra 4

This course includes some review of advanced algebra, graphing calculator, sequences and series, permutations, combinations, probability, matrices and determinants. New topics and extensions include mathematical induction, graphing, inequalities and polynomial functions, limits and continuity, exponential functions, trigonometry and vectors, polar graphs, complex numbers, DeMoivre's Theorem, probability, and statistics. Upon successful completion of this course, students may elect 03481/03482 Calculus 1AB, 2AB.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron & Pioneer

03431, 03432	<b><u>Math Analysis 1AP, 2AP</u></b>	Semester	11	Successful completion of 03331/03332 Algebra 3AC, 4AC.
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This course is intended for students wishing to enroll in an AP program. Topics are developed in greater depth and breadth than in 03421/03422 Math Analysis 1AC,2AC. This is a rigorous course which bridges the gap between advanced algebra and calculus. Upon successful completion of the course, students may elect 03491/03492 Calculus 1BC, 2BC.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron & Pioneer

03461, 03462	<b><u>Computer Science 1AP, 2AP</u></b>	Semester	11 12	One year of Geometry; preferably second-year Algebra. Should already be able to write programs in C/C++.
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This course is meant to build upon the skills developed in Computer Programming. Using primarily the C++ programming language, students will undertake a rigorous exploration of the theory and associated techniques of object-oriented computer programming. Topics will include: 1) The history and development of the object-oriented approach to computer software engineering; 2) How to utilize the object-oriented aspects of the C++ to achieve its full potential as a programming tool; 3) How C++ is related to other popular object-oriented programming languages, such as Java; 4) Future developments in object-oriented programming languages and computer programming in general.

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COURSE #	COURSE	TERM	GRADE	LEVEL	PREREQUISITE
03471, 03472	<b><u>Statistics 1AP, 2AP</u></b>	Semester	11	12	03331/03332 Algebra 3AC,4AC or demonstrated success in 03322 Algebra 4.

This course has four major themes: exploratory analysis, planning a study, probability and simulation, and statistical inference. The goal of the course is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students who successfully complete the course may elect to take the Advanced Placement Statistics Exam to establish college credit and/or placement.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron & Pioneer

03481, 03482	<b><u>Calculus 1AB, 2AB</u></b>	Semester		12	Successful completion of 03421/03422 Math Analysis 1AC, 2AC or 03411/03412 Math Analysis 1, 2.
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This course includes topics normally taught in an integrated analytic geometry and calculus course. Students who successfully complete this course usually take the Advanced Placement Calculus AB Exam offered in May by the College Entrance Examination Board to establish college credit and/or placement.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron & Pioneer

03491, 03492	<b><u>Calculus 1BC, 2BC</u></b>	Semester		12	Successful completion of 03431/03432 Math Analysis 1AP, 2AP.
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This rigorous course is designed to include all the topics outlined by the College Entrance Examination Board for the BC Calculus Advanced Placement Examination. Students in this course may elect to take the BC Calculus Advanced Placement Examination to establish college credit and/or placement.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron & Pioneer

## MATHEMATICS

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COURSE #	COURSE	TERM	GRADE	LEVEL	PREREQUISITE
04441	<u>Physics-Analysis</u>		11	12	Successful completion of two years of Algebra and one year of Geometry.

Physics-Analysis 04441 is a two-hour inter-disciplinary block class. It is a course which combines the curriculums of Physics 04439/04440 and Math Analysis 03411/03412. The physics curriculum provides a wonderful application for many of the topics covered in analysis. An emphasis is placed on showing how many math ideas and concepts are used in science. Amongst these are vectors, sequences and series, limits, introductory calculus (applied maximum/minimum, time rates of change, simple integration), exponential growth and decay, trigonometry, and circular functions. Laboratory work and experiments are the chief method used to study Newtonian Physics. In addition, an emphasis is placed on developing problem solving skills.

**CREDIT(S)** 1.0 unit per semester

**SCHOOL(S)** Pioneer only

# MATHEMATICS

## CORE MATH

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Core Mathematics is a four year high school mathematics program funded by the National Science Foundation. **Each year the curriculum features multiple strands of algebra/function, geometry/trigonometry, statistics/probability and discrete mathematics.** Concepts are connected through common topics and through fundamental themes (i.e., data, representation, shape, change, and chance). The curriculum emphasizes mathematical modeling and modeling concepts of data collection, representation, prediction, cause-and-effect, and simulation. The information processing and graphing capabilities of calculators and computers enable students to focus on mathematical thinking. **Units are organized around multi-day lessons consisting of two or three related investigations.** Instruction and assessment practices are designed to promote mathematical thinking through engaging problem situations that involve students, both in groups and individually, in investigating, conjecturing, verifying, evaluating, and communicating ideas.

COURSE #	COURSE	TERM	GRADE LEVEL	PREREQUISITE
03151	<u>Core Mathematics 1</u>		9	Successful completion of Middle School Algebra A.

The units are Patterns in Data; Patterns of Change; Linear Models; Patterns in Space and Visualization; Graph Models; Simulation Models; Patterns of Location, Shape, and Size; Nonlinear Models.  
 Upon completion of this course, students should enroll in Core Mathematics 2.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron only

03251	<u>Core Mathematics 2</u>		9 10	Completion of Core Mathematics 1 or successful completion of Middle School Accelerated Algebra AB.
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The units are Matrix Models; Patterns of Location, Shape and Size; Patterns of Association; Power Models; Network Optimization; Geometric Form and its Function; Patterns in Chance.  
 Upon completion of this course, students should enroll in Core Mathematics 3.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron only

03351	<u>Core Mathematics 3</u>		11	Completion of Core Mathematics 2.
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The units are Multiple-variable Models; Patterns in Variation; Modeling Motion; Functions and Algebraic Reasoning; Shapes and Geometric Reasoning; Discrete Models of Change; Surveys and Samples.  
 Upon completion of this course, students should enroll in Core Mathematics 4 or Physics-Analysis.

**CREDIT(S)** .50 unit per semester **SCHOOL(S)** Huron only

**MATHEMATICS**  
**CORE MATH**  
**Course Guide - Huron & Pioneer**

COURSE #	COURSE	TERM	GRADE LEVEL	PREREQUISITE
03451	<b><u>Core Mathematics 4</u></b>			12 Completion of Core Mathematics 3.

The units are Modeling Motion; Function Composition and Inverses; Counting and Induction; Geometry in Space(s); Polynomial and Rational Functions; Transcendental Functions; Complex Numbers; Rates of Change.

*Not offered this year.*

**CREDIT(S)** .50 unit per semester

**SCHOOL(S)** Huron only