



Northwood School Academic Program 2021-2022

Phase One: Core Subject Selections

Northwood School's Academic Philosophy and Approach to Education

The Northwood School academic philosophy builds on the school's mission and serves as the foundation for all aspects of the curriculum.

Northwood School prepares students to shape the future. We engage students in the active pursuit of knowledge and believe that students learn best through exploration and inquiry. Students gain resilience, become independent thinkers, and challenge perspectives by forming relationships with their teachers and peers. The Northwood experience is rooted in the Adirondacks and creates confident, globally-minded students, ready to innovate and adapt to our ever-changing world.

At the core is a broad and challenging college-preparatory curriculum that includes a variety of Honors and AP courses. Building on the Northwood academic experience, students explore areas of interest with academic programs designed to strengthen intellectual abilities, promote character development and advance interests in specific subject areas.

Graduation Requirements

The graduation requirements outlined on the following page must be met in order to earn a Northwood diploma. Five academic courses are the standard load for Northwood students. Students are urged to challenge themselves academically which, for many, means taking courses well beyond those required for a diploma. Northwood strongly recommends that students take a rigorous academic program for personal growth as well as for the practical purpose of increasing college options.

Graduation Requirements

The minimum number of credits required for graduation is 60. A year-long course earns 3 credits, a trimester elective earns 1 credit.

	Credits	Required Courses
HUMANITIES DEPARTMENT		
<i>Integrated Humanities (Each course is 6 credits/year; equivalent to 1 English and 1 Social Science course)</i>	12	Integrated Humanities (9th and 10th graders) or equivalent
<i>English</i>	6	An English course is required every year
<i>U.S. History</i>	3	Required
<i>World Languages</i>	6	Two years of the same language required, three preferred
<i>Art</i>	3	Visual and/or Performing Art, Design
STEM DEPARTMENT		
<i>Science (lab)</i>	9	Life science and physical science
<i>Math</i>	9	Algebra I, Geometry, Algebra II
ELECTIVES	12	
TOTAL	60	
LEAP	Additional 1 credit/ year	Students will complete a LEAP program each year of enrollment excluding senior year.
HEALTH	Additional 1 credit	NY State requires all students to have earned a high-school-level health credit.

Northwood School Phase One Course Offerings: 2021-2022

Honors and Advanced Placement Courses

In order to qualify to take AP or Honors-level courses, students must have earned honors grades (a minimum grade of a B+ in the prerequisite Honors course) and have made effort grades of Good or Excellent. Teacher recommendations are also required for placement. Exceptions to these guidelines will only be made for special circumstances and after consultation by the current teacher, the Department Chair, and the Dean of Academic Affairs.

All students taking AP courses must take the National AP exam for that course. If a student fails to take an AP exam, he/she may not have the AP name placed on his/her transcript at the end of the year and will lose the course weighting.

Humanities Department

(Core Subjects: English, Social Science, World Languages)

Integrated Humanities

9th and 10th Grade Students

All 9th and 10th grade students will be enrolled in an integrated humanities course which counts towards both English and Social Science credits.

In combining traditional English and History courses, Integrated Humanities offers a more comprehensive understanding of both literary works and historical events. Students will become familiar with the systems of thought and human organization that have shaped both larger decisions of society and the details of everyday life. Students will examine important historical events and turning points while also exploring artwork and literature vis-à-vis historical points of view. Emphasis will be on analytical skills as well as personal connection to texts. Exploring the ideological context of the ancient and modern world will serve to not only facilitate deeper content knowledge, but a better understanding of the connection between culture and current events. The course will be inquiry-driven and include project-based and collaborative work, emphasizing the mastery of core communication, research and writing skills to prepare students to be independent learners.

English

11th Grade - PG Students

A.P. English Literature and Composition

Prerequisites: honors grades in previous courses and teacher recommendation. Offered in alternate years, the AP English Literature and Composition course focuses on reading, analyzing, and writing about imaginative literature (fiction, poetry, drama) from various periods. Students engage in close reading and critical analysis of imaginative literature to deepen their understanding of the ways writers use language to provide both meaning and pleasure. As they read, students consider a work's structure, style, and themes, as well as its use of figurative language, imagery, and symbolism. Writing assignments include expository, analytical, and argumentative essays that require students to analyze and interpret literary works. The course culminates in the A.P. exam in May.

Welcome to the 2021-2022 Short Course English offerings!

Northwood allows for more student choice in the upper-level English offerings. This is designed to allow you to pursue areas of interest once basic subject skills have been mastered. As you will see from the varied and exciting options below, this approach also allows for teachers to dive deeply into their passions and areas of expertise, ultimately benefiting YOU!

Important Points:

- A combination of any three short courses fulfills a full year of English requirement.
- All of the below classes may also be taken as electives (beyond the English requirement).
- All short course offerings meet equal standards of rigor.
- Please read the offerings carefully as many mention specific projects or studies that may pique your interest!

Process of Selecting Courses:

1. After perusing the offerings below, you will choose the options you like.
2. Keep in mind that you are selecting now for the entire year.
3. You will be placed in a course depending on space availability and your own schedule constraints.
4. More than one section of a popular course may be offered.
5. Priority in classes that fill up will be offered first to PG students and 12th graders, then to 11th graders.
6. Priority will also be given to those enrolling to meet their English requirement over those enrolling as electives.

English Course Short Offerings Descriptions

1. The Black Experience in Literature

The Black Experience in Literature course provides insight into the Black experience through readings from King, DuBois, Wright, Brooks, Lorde, Baldwin, Hansberry, Sanchez, and Baraka. Students will discuss issues ranging from the relationship between literature of the African American experience and mainstream literature to key concepts of ethnic diversity and cultural inclusion. We will also evaluate literary works through multiple critical methodologies and write thesis-driven essays using the literature as a primary source.

2. The Contemporary American Novel

This course will examine selected works of American fiction published over the last four decades, with an emphasis on the relationship between contemporary American literature and the world we live in. What does it mean to read and write literature in the digital age? Possible readings will feature authors such as Cormac McCarthy, Celeste Ng, Colson Whitehead, Margaret Atwood, and Kazuo Ishiguro.

3. The Content of Our Character

This is a reading-based course that will include five classic books, each exploring one of Northwood's core values: Respect, Responsibility, Courage, Compassion and Integrity. One of the culminating projects of this course will be a service project for the community.

4. Facing Adversity

This course will explore the literary, psychological, philosophical, and emotional components of the way people face difficulty in their lives. Readings will include well-known stories like "Endurance" (Shackleton's Antarctica voyage), literary masterpieces like *One Day in the Life of Ivan Denisovich*, contemporary autobiography like *When Breath Becomes Air*, with lessons by Martin Luther King, Maya Angelou, Victor Frankl, and Rollo May. We'll also do two projects. One is an outdoor experience to help students reflect on the nature of adversity from personal experience. The second is an interview and write-up of a person who has faced or is facing significant adversity.

5. From Word to Essay

This course will look at the English language as a tool for exploring our place in the world. From word choice, through sentence design, paragraph building and, finally, essay writing, students will get to better understand how deliberate and concise language use helps us both form understandings and communicate with others. On one end, the class will cover structural grammar and at the other end will read and evaluate great non-fiction writing. Students will build and maintain a website for writing hints, good samples, and the publication of their work.

6. Literary Themes and Analytical Writing

This course will focus on core reading and writing skills needed for upper-level high school and college English courses. Designed as a survey course, students will engage with both fiction and nonfiction works, from short stories and essays to full-length works. Emphasis will be on comprehension and interpretation as well as reinforcing the skills of clear written and spoken communication. Students will be expected to write descriptive, expository, analytical and persuasive essays throughout the term. Students may elect to take this course or may be recommended for it.

7. Nonfiction Reading and Writing

This course will cover a selection of readings from mostly American writers of the 20th century, including long-form journalism like that found in *The New Yorker*, relatively personal forms of journalism (Joan Didion, Norman Mailer, Tom Wolfe), critical writing (Arthur Danto, Pauline Kael, Camille Paglia, John Leonard, Susan Sontag), memoir (N. Sott Momaday, Jane Brox), and “popular” genres (sports, Red Smith; travel, Bruce Chatwin; food, M.F.K. Fisher). Writing exercises will include personal essays and emulations of the styles of some of the writers studied.

8. Philosophy and Literature 1 (Truth & Beauty)

The first trimester of Philosophy and Literature will focus on the nature of truth. We will, in the trimester’s first half, study short passages from three of the world’s greatest philosophers (Plato, Descartes, and William James) and read poetry and fiction that deals with the questions they raise about the nature of truth. One element of the course will be actual formal debates. In the second half of the term, we will focus on beauty and art, applying the thoughts of Dewey, Tolstoy, and Santayana to everything from literature to paintings and sculpture to rap music.

9. Philosophy and Literature 2 (Goodness & Commitment)

The second trimester of Philosophy and Literature will consist of two units. The first will focus upon goodness. After studying the thoughts of Aristotle, Kant, and Buber, we will read poetry and short stories and study three films (*Do the Right Thing*, *The Unforgiven*, and *Crimes and Misdemeanors*). The second unit will cover commitment; for this section, we will study the philosophers Sartre, Stace and Niebuhr and two plays: *Antigone* and *The Skin of Our Teeth*.

10. Short Fiction

Short Fiction will focus upon reading and writing about some of the greatest novellas and short stories ever written. All will explore a significant moral issue. Authors studied include Joseph Conrad, Herman Melville, Flannery O’Connor, John Steinbeck, Charlotte Gilman, Ivan Bunin, and Stephen Crane. This course is for those who love thought, discussion and debate.

11. Twentieth Century Poetry

Twentieth Century Poetry covers controversies, form and technique of the century through the study of its literary movements, major poets, and communities. We will read selections from the early twentieth century, Imagists, Modernists, Objectivists, Formalist, midwestern, mid and late century American, Native American, and African American and more. Students will also develop their creative writing skills with original composition and further develop their written skills in literary criticism, conventions, and terminology appropriate for the genre.

12. Understanding Shakespeare: The Nature of Performance

This course will explore Shakespeare's plays with a focus on his tragedies. Possible readings include *Hamlet*, *Julius Caesar* and *Macbeth* as well as selections from Shakespeare's sonnets. We will watch performances in class and stage moments of the plays ourselves to gain greater insight into the way that plays make meaning. Additionally, we'll study Shakespeare's drama through both primary and secondary texts. The course is suitable for students with little or no prior knowledge of Shakespeare and also for those wishing to become more familiar with the playwright's work.

13. The Voice of Toni Morrison

Winner of the Pulitzer Prize for Fiction and the Nobel Prize for Literature, Toni Morrison, who passed away in August of last year, ranks as one of America's greatest novelists. As Mason Stokes, a scholar of Toni Morrison, says, "Her work explores contradictions that lie at the heart of American identity: the love of freedom in a country founded on slavery; the fact of racial bigotry in a country allegedly dedicated to equality; and the role of community in a country that worships the individual." In this course, we will focus on understanding Morrison's complex American experience through a selection of her novels, most likely including *The Bluest Eye*, *Sula*, and *Beloved*. We'll also read excerpts from her nonfiction work, *Playing in the Dark*, as well as a selection of scholarly criticism.

Social Science

9th and 10th Grade Students

See Integrated Humanities above.

11th Grade - PG Students

U.S. History is a required course for graduation. All 11th grade - PG students will take U.S. History or A.P. U.S. History if they have not already done so.

United States History

United States History introduces students to the study of American History. Examination of Colonial British North America, the American Revolution and framing of the Constitution shape our early study. Important themes from this material will then be examined throughout the remainder of the course. Students will develop an understanding of American history and improve their essential communicative and critical thinking skills through emphasis on writing, the formation of historical arguments, and development of analytical reading skills through a variety of media. Film, online databases, books, online journals, and academic web resources expose students to a wide spectrum of opinions and views on American history. From this, students will form their own opinions and produce original work.

A.P. United States History

Prerequisites: honors grades in previous course and teacher recommendation. This AP course is the equivalent of an introductory level college survey course. It will emphasize the skills, themes, and time periods of American history as laid out by the College Board in their recent curriculum redesign. Students will learn a significant volume of material through classroom instruction as well as independent learning. Through the year, students will familiarize themselves with the issues surrounding the settlement of, development of, and rise of America. Topics include the evolution of Colonial British North America, the American Revolution and Constitution, the growth and expansion of the nation during the 19th century, the rise of industry in the late 19th century, Secession, Civil War, and Reconstruction, the evolution of equality, and major historical issues of the 20th century.

A.P. World History: Modern

Prerequisites: honors grades in previous courses and teacher recommendation. The course is an introductory college-level modern world history course. Students cultivate their understanding of world history from c. 1200 CE to the present through analyzing historical sources and learning to make connections and craft historical arguments as they explore concepts like humans and the environment, cultural developments and interactions, governance, economic systems, social interactions and organization, and technology and innovation.

A.P. Psychology

Prerequisites: honors grades in previous courses and teacher recommendation. This AP course provides an overview of current psychological research methods and theories. Students explore the therapies used by professional counselors and clinical psychologists and examine human reactions: how people learn and think, the process of human development and human aggression, altruism, intimacy, and self-reflection. Students study the core psychological concepts, such as the brain and sense functions, and learn to gauge human reactions, gather information, and form meaningful syntheses. The equivalent of a 100-level college survey course, AP Psychology prepares students for further studies in psychology and life sciences. To help prepare students for the AP exam, each unit exam is designed to replicate the AP Psychology exam. Students also participate in a variety of experiments. These range from quick in-class exercises to replications of famous experiments to self-designed experiments.

Advanced Humanities Research Program

The Advanced Humanities Research Program provides a platform to engage in independent research within the fields of history, literature, the arts and social sciences. Students with a deep interest in one of these areas will design and implement their own research projects throughout this year-long course. By pursuing preliminary research on their topic of interest, and then generating their own focus questions and ultimately their own study design, students will develop the mastery to critically think about the world. Formal presentations of the results at the end of the year will further develop the students' communication and critical thinking skills.

Enrolled students must hold a genuine interest in the humanities and a deep desire to conduct independent research. Depending on the students' interests, mentorships with regional experts may be arranged to support the student with expert advice and exposure to a higher level of academic engagement. Placing a special emphasis on research directly related to the unique institutions and history within the Adirondack Park will further develop the relationship between Northwood School and the community and foster in these young researchers a deeper awareness of their surroundings.

Prerequisites: Honors grades in history courses required. Successful completion of an AP history course is beneficial. Interested students must fill out an application to be considered for the course. Enrollment is limited.

World Languages

Spanish I

Spanish I provides a foundation for the development of skills in listening, speaking, reading and writing. Students are encouraged to communicate in Spanish for practice in speaking and listening. The course covers basic vocabulary that allows students to communicate effectively by asking and answering question, describing situations, and expressing needs. Students learn a variety of grammatical concepts so they can communicate in the present and future tenses. As the year progresses, we build on a foundation in vocabulary and grammar to develop reading and writing skills. Students gain appreciation of the cultural diversity within Spanish-speaking countries as they reflect on their own perspectives and experiences. Students also engage in a variety of authentic celebrations that foster appreciation of other cultures.

Spanish II

Prerequisites: Spanish I. In addition to reinforcing and broadening listening comprehension, speaking, reading and writing skills, this course integrates cultural and historical information about the Spanish-speaking world through short stories, news articles, and poems. In this course, students explore the subtleties of language with an emphasis on the differences between the imperfect and preterite tenses and between the prepositions *por* and *para*. Students are expected to communicate in Spanish through sustained speech and are required to write short essays using compound and complex sentences in the imperfect, progressive, present, and preterite tenses.

Spanish III

Prerequisites: Spanish II. Spanish III continues the building of competence in the language by adding to the students' command of verbs with progressive and perfect constructions, the conditional mood, and imperatives. Sub-units of study look at subtleties in the management of interrogatives and their related adverbial forms; conjunctions; prepositions; and reflexive and object pronouns. Short poems committed to memory—one poem per trimester—give students a lasting acquaintance with the work of some revered writers and serve as a platform for focused refinement of pronunciation skills. Short stories and news items provide authentic reading experience and material for discussion. Films of various lengths, both narrative and documentary, provide listening practice and further material for discussion. Podcast-style audio projects, undertaken in small groups, provide practice in the composing and editing of narrative and descriptive text and in presentational speaking.

Spanish IV/V (Honors)

Prerequisites: Spanish III or IV with grades of B. This is an advanced honors-level Spanish class for students who have mastered the skills taught in levels I, II, and III, and who have earned at least a B grade. Advanced grammatical skills are reviewed throughout the year in addition to readings of sophisticated literature, compositions, comprehension-based activities, and group project-based learning. Authors include García Lorca, García Márquez, and Neruda.

French II

Prerequisites: French I. This course is a continuation of first year French. It strives to cultivate a true interest in French language and culture. Through building on the basics of French I skills, French II enables students to communicate in simple sentences in spoken or written French. It also widens students' worldviews by introducing them to French speaking cultures.

French III

Prerequisites: French I, II. This course is a continuation of French II. It is designed to broaden the student's outlook on life and the world around him/her. It opens doors to future career choices: it helps students learn about themselves as they become more aware of others, and it aids in communication skills. All basic verb tenses are studied, vocabulary acquisition is emphasized, and daily speaking and listening are an essential part of the course. Students write short compositions in French.

French IV / V (Honors)

Prerequisites: French I, II, III. This is an advanced honors-level French class offered to qualified students who show genuine interest in mastering the language and understanding the culture. Classes are given in French entirely. During the early part of the year, emphasis is placed on grammar review, verbal expression using basic vocabulary and reading short stories. Later in the course, we concentrate on more difficult grammatical concepts, more sophisticated vocabulary and reading French literature. Throughout the year students are required to present their work both orally and/or in written form.

Additional World Languages

Some of our students choose to study additional languages online. We have worked with Middlebury Interactive Languages and One Schoolhouse to oversee Mandarin, Latin, German, and AP Spanish courses.

STEM Department

(Core subjects: Sciences, Mathematics)

Sciences

Geology

Prerequisites: none. Geology investigates the structure of the earth with a focus on landscapes in the Adirondack Park. Topics include Earth's formation, plate tectonics, mineralogy, weathering/erosion, mountain building, and surface geomorphology. Field trips are an essential component of this course. Local topographic features, including rocks in the High Peaks and Ausable River, will be studied in the field. The course concludes with a scenic flight giving students a bird's eye view of topics students have studied all year.

Biology

Prerequisites: none. Biology includes the basic concepts of life science with an emphasis on how they relate to the ecosystems in the Adirondack Park. Topics include ecology, chemistry of life, cellular structure and function, genetics, and human systems. Field trips, critical thinking activities, laboratory exercises and classroom discussions reinforce the topics covered. The six-million-acre Adirondack Park serves as nature's classroom for this course; the woods, lakes, rivers, and mountains provide unique learning opportunities for students.

Chemistry

Prerequisites: biology and must be enrolled in Algebra II. Chemistry develops a foundational understanding of major concepts in the field such as atomic theory, periodic law, chemical bonding, and stoichiometry. Critical thinking activities, laboratory exercises, and classroom discussions about chemistry in our everyday lives reinforce this knowledge. Students also gain experience writing lab reports, solving practical problems, and analyzing experimental data.

Honors Chemistry

Prerequisites: honors grades in biology and math, enrolled in Honors Algebra II, and teacher recommendation. Honors Chemistry introduces the basic concepts of chemistry. The course also provides laboratory experience to develop students' experimental and problem-solving skills and prepares students for college chemistry courses by covering topics in more detail. Topics covered include matter, atomic theory, electrons, chemical bonding, nomenclature, mole concepts, chemical reactions, stoichiometry, gas laws, molecular structures, solutions, equilibrium, acid-base reactions, redox, and nuclear chemistry.

Physics

Prerequisites: biology, chemistry, and must be enrolled in Pre-calculus. Physics develops the student's observational and analytical problem-solving skills. Theoretical concept development is emphasized along with problem-solving and laboratory skills. A background in algebra is assumed, and trigonometric concepts are needed components of our study. The course covers classical mechanics including kinematics (the description of motion in one and two dimensions), dynamics (the causes of motion, Newton's laws of motion), and the conservation laws (energy and momentum). In addition, we study topics selected from statistics, waves, sound, and light. Several projects through the year integrate physics principles with elements of engineering and technology.

Honors Physics

Prerequisites: honors grades in math and chemistry, enrolled in Honors Pre-calculus, and teacher recommendation. The course moves at a faster pace than Physics and covers the following material in depth: classical mechanics including kinematics (the description of motion in one and two dimensions), dynamics (the causes of motion, Newton's laws of motion), and the conservation laws (energy and momentum). In addition, we study topics selected from statics, waves, sound, and light. Several projects through the year integrate the physics principles studied with engineering and technology to achieve a deeper understanding of the topics.

Environmental Science

Prerequisites: biology. Environmental Science is a broad scientific survey course designed to garner a holistic perspective and improve the student's ecological literacy. The goal is to ignite systems thinking and develop the skill set needed to discover answers and analyze options, and to use ecological systems as a successful model to help us deal with environmental issues. This perspective and the accompanying skills help build a framework for decision making for use throughout life. The Adirondack park serves as an extension of the classroom for this course.

Human Biology

Prerequisites: biology and one other lab science. Human Biology takes a hands-on approach to learning the structure and function of human body systems. The course aims to expand the student's current knowledge of how the human body works by studying the major body systems leading to an understanding of how their daily activities affect their health now and in the future. Students will also relate how disease leads to loss of functioning in the systems. Labs include dissections of a number of major animal organs. Students will also have the opportunity to get American Red Cross First Aid and CPR certified upon successful completion of the First Aid unit.

A.P. Environmental Science

Prerequisites: honors grades in biology and chemistry, and teacher recommendation. The AP Environmental Science course is the equivalent of a one semester, introductory college course in environmental science; it includes geology, biology, ecology, chemistry, economics, sociology, politics and geography. Classes include lectures, hands-on activities, student presentations, labs, fieldwork, class discussions, group projects, films and guest speakers. The key themes of the course are sustainability, energy transfer, interactions between earth systems, species and the environment. The first trimester explores how these themes play out in ecosystems while the second and third trimesters investigate how humans have altered the environment and are working to find solutions to address the negative impacts of humanity. While designed to prepare students for the AP exam, the course fundamentally creates systems thinkers and holistic problem solvers. The Adirondack park serves as an extension of the classroom for this course.

A.P. Biology

Prerequisites: honors grades in biology and chemistry, and teacher recommendation. Offered to qualified students who have successfully completed biology and chemistry with a record of high achievement in the sciences. AP Biology is a challenging full-year college-level introduction to the study of biology. The course examines life from the molecular and cellular levels through organisms, genetics, and evolution. Throughout the year, students will develop advanced inquiry and reasoning skills, such as designing a plan for collecting data, analyzing data, applying mathematical solutions, and connecting concepts in and across areas of study. All students must take the national AP Exam in May.

Advanced STEM Research Program

The Advanced STEM Research Program provides a platform to engage in independent research within the fields of biological sciences, physical sciences, behavioral sciences and engineering. Students with a deep interest in scientific discovery will design and implement their own research projects throughout this year-long, A.P. equivalent-level course. By engaging in literature research, generating a testable hypothesis, implementing an experiment and analyzing the

results, students will develop the mastery to critically think about the scientific world. Formal presentations of the results at the end of the year will further develop the students' communication and critical thinking skills.

Enrolled students must hold an interest in problem solving and a deep desire to conduct independent research. Depending on the students' interests, mentorships with regional scientists may be arranged to support the student with expert advice and exposure to a higher level of academic engagement. Placing a special emphasis on research directly related to systems within the Adirondack Park will further develop the relationship between Northwood School and the community and foster with these young scientists a deeper awareness of their living environment.

Prerequisites: Honors grades in chemistry required. Successful completion of an AP Science course is beneficial. Interested students must fill out an application to be considered for the course. Enrollment is limited.

Mathematics

Algebra I

This is a first-year algebra course in which students learn to reason symbolically. The key content involves writing, solving, and graphing linear and quadratic equations, including systems of two linear equations in two unknowns. Quadratic equations are solved by factoring, completing the square, graphically, or by application of the quadratic formula. The course also includes study of monomial and polynomial expressions, inequalities, exponents, functions, rational expressions, ratio, and proportion. Algebraic skills are applied in a wide variety of problem-solving situations.

Geometry

Prerequisites: Algebra I. In this course, students' study two- and three-dimensional shapes and their relationships in plane and space. It is a visual as well as analytic subject, integrating spatial and numerical concepts. Students classify and describe shapes in terms of congruence, similarity, and transformations. The course introduces students to different forms of mathematical logic, including inductive and deductive reasoning. Students solve measurement and algebraic problems using properties, proportions, and trigonometric relationships. Algebra is reviewed with geometric applications.

Algebra II

Prerequisites: Algebra I. Algebra II is intended to help students enrich their skills and develop more concepts beyond basic algebra as they prepare for higher level math courses. This course is designed to help students apply the mathematics they learn in the classroom to real world situations, communicate mathematically, and use technology appropriately. Topics that connect various areas of mathematics to algebra, geometry and trigonometry will be studied. Students will study real numbers, operations, and patterns as they extend their understanding of algebraic concepts. They will work with complex numbers, logarithms, polynomial functions, systems of equations and inequalities, transformations, and mathematical models.

Honors Algebra II

Prerequisites: Honors grades in earlier courses and teacher recommendation. This course is designed for students who have demonstrated exceptional ability and motivation in math. This course is designed to help students apply the mathematics they learn in the classroom to real world situations, communicate mathematically, and use technology appropriately. Topics that connect various areas of mathematics to algebra, geometry and trigonometry will be studied. Students will study real numbers, operations, and patterns as they extend their understanding of algebraic concepts. They will work with complex numbers, logarithms, polynomial functions, systems of equations and inequalities, transformations, and mathematical models.

Pre-Calculus

Prerequisites: Algebra II. Pre-calculus builds upon mathematical and analytical concepts introduced in Algebra II and prepares students for upper-level mathematics courses, both at the secondary and collegiate levels. Students study linear, quadratic, polynomial, rational, exponential and logarithmic functions, analytic geometry, triangle trigonometry and trigonometric functions, complex numbers, probability, and statistics.

Honors Pre-Calculus

Prerequisites: Honors Algebra II or honors grades in previous courses and teacher recommendation. This course is designed to provide students with a strong foundation of precalculus concepts, techniques, skills, and applications necessary to succeed in upper-level mathematics courses, both at the high school and college levels. Students will develop quantitative reasoning and problem-solving skills by being active learners and expanding their ability to analyze and interpret given information. Students will develop the ability to understand and communicate mathematical ideas effectively and develop an appreciation of the wide range of mathematical applications and opportunities in the world around us.

Calculus

Prerequisites: Pre-calculus, honors grades in earlier courses and teacher recommendation. Calculus explores the concepts of derivative and integral calculus to give students a solid foundation upon which to build mathematical knowledge in future courses. Specifically, students study functions and different representations of functions (graphically, numerically, algebraically, etc.), limits, derivatives and differentiation, applications of derivatives, definite integrals, indefinite integrals, and applications of integrals. Students should have a solid foundation and a proven understanding of functions (polynomials, exponential, logarithmic, trigonometric) from a Pre-calculus course.

Statistics

Prerequisites: Algebra II or equivalent. Statistics' students explore statistical concepts central to the analysis of data in many sciences and social science disciplines. Specifically, students explore data to describe patterns, departures from patterns, and associations between variables; plan and conduct experimental studies; investigate chance and random processes using probability and simulation; and learn how to objectively estimate population parameters and scientifically test hypotheses using statistical inference. Critical thinking, inferential reasoning, and communication – both oral and written – are emphasized over calculation and algebraic manipulation. Use of technology – graphing calculators, spreadsheets, and statistical analysis software – is prevalent throughout the course.

A.P. Calculus (AB)

Prerequisites: Honors Pre-calculus, honors grades in earlier courses and teacher recommendation. This course prepares students for the AP Calculus exam. The AP course covers topics in differential and integral calculus, including concepts and skills of limits, derivatives, definite integrals, and the Fundamental Theorem of Calculus. The course teaches students to approach calculus concepts and problems when they are represented graphically, numerically, analytically, and verbally, and to make connections amongst these representations. Students learn how to use technology to help solve problems, experiment, interpret results, and support conclusions.

A.P. Statistics

Prerequisites: Pre-calculus, honors grades in earlier courses and teacher recommendation. This course follows a curriculum that prepares students for the AP Statistics exam. Students explore the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring data to describe patterns and departures from patterns, planning and conducting an experimental study, exploring random phenomena using probability and simulation to predict patterns, and estimating population parameters and testing hypotheses using statistical inference. Students must show strong critical thinking and inferential reasoning skills as well as excellent communication skills, both oral and written. Use of technology – graphing calculators and statistical analysis software – is prevalent throughout the course.