

Northbrook Academy

High School Curriculum Guide
2011-2012

Our Philosophy

Northbrook Academy is dedicated to students' **personal success** through the development of mind, body & spirit. This holistic approach is ultimately what makes up the Northbrook Experience. We think of this goal as our educational triad, which happens to map to the three leaves of our school symbol, the shamrock.



Northbrook Academy believes that much learning goes on among peers and strives for a student population that is diverse in geographic, economic, social, and racial backgrounds.

Our community includes a population expected to:

- appreciate diversity
- embrace global thinking
- value inter-dependencies
- act in accordance with our honor code, with *fairness, justice, honesty, integrity, and respect*

Curriculum Overview

The Northbrook High School Curriculum Guide lists and describes course offerings available for students at Northbrook Academy High School. In accordance with the Northbrook philosophy, these courses offer a selection of classes, which if successfully completed, will lead all students to graduate having fulfilled state mandated requirements for graduation.

The Massachusetts Department of Education recommends that high school students complete the MassCore program. The MassCore program includes four years of English; four years of mathematics; three years of lab-based science; three years of history; two years of the same foreign language; one year of an arts program; and five additional "core" courses such as business education, health, and technology. MassCore also encompasses additional learning opportunities including AP classes, dual enrollment in college classes while in high school, a senior project, online courses for high school or college credit, and service or work-based learning.

In addition to these core state requirements, Northbrook Academy will be following the core academic requirement suggested from the International Baccalaureate program of studies. The IB Diploma Program, a junior/senior program will officially begin in the fall of 2013. However, courses offered in freshman and sophomore years are designed to prepare students for the success with the IB diploma program. Therefore, high school courses at Northbrook Academy will align with the IB mission statement:

“The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect. To this end the organization works with schools, governments and international organizations to develop challenging programs of international education and rigorous assessment. These programs encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.”

Please note that the “IB” initials used in front of advanced courses in this curriculum guide is for descriptive purposes based upon Northbrook’s commitment and intent to become a certified IB school. We cannot clearly describe our IB intentions without using this prefix.

Northbrook Academy's IB Diploma Program Plan

The schedule given below is the suggested sequence of high school courses that will be offered at Northbrook to support the initial class in the IB Diploma Program. The choice of IB courses in this proposal is based in part on traditional areas of strength and interest of the Northbrook program and alignment with the mission of Northbrook Academy. As the high school expands, and the numbers of students increases, additional areas of study within the IB program will be supported.

Sample High School Program of Studies (for a student continuing from Northbrook Middle School and with an IB focus of HL chemistry and HL arts)**Grade 9**Semester 1

Algebra 2
Biology
World Literature I
Spanish 3
History of World Religion
Physical Education
Electives (choices vary)

Semester 2

Algebra 2
Biology
World Literature I
Spanish 3
History of World Religion
Physical Education
Electives (choices vary)

Grade 10Semester 1

Geometry
Physics
American Literature
Intermediate Spanish 3
US History I
Physical Education
Electives (choices vary)

Semester 2

Geometry
Physics
American Literature
Intermediate Spanish 3
US History II
Physical Education
Electives (choices vary)

Grade 11Semester 1

Statistics
IB Chemistry I (HL)
IB Literature 2 (SL)
IB Advanced Spanish (SL)
Modern World History (SL)
IB Arts I (theatre, music, visual) (HL)
IB Theory of Knowledge I
Physical Education
IB Project Advisement
IB Computer Science (elective)

Semester 2

IB Math I (SL)
IB Chemistry I (HL)
IB Literature 2 (SL)
IB Advanced Spanish (SL)
IB ITGS* I (HL)
IB Arts I (theatre, music, visual) (HL)
IB Theory of Knowledge I
Physical Education
IB Project Advisement

Grade 12Semester 1

IB Math II (SL)
IB Chemistry II (HL)
IB Literature 3 (SL)
IB Autonomous Spanish (SL)
IB ITGS II (HL)
IB Arts II (theatre, music, visual) (HL)
IB Project Advisement
IB Theory of Knowledge II
Physical Education
Modern World History II

Semester 2

IB Math II (SL)
IB Chemistry II (HL)
IB Literature 3 (SL)
IB Autonomous Spanish (SL)
IB ITGS II (HL)
IB Arts II (theatre, music, visual) (HL)
IB Project Advisement

Physical Education
History Elective

* ITGS Information Technology in a Global Society

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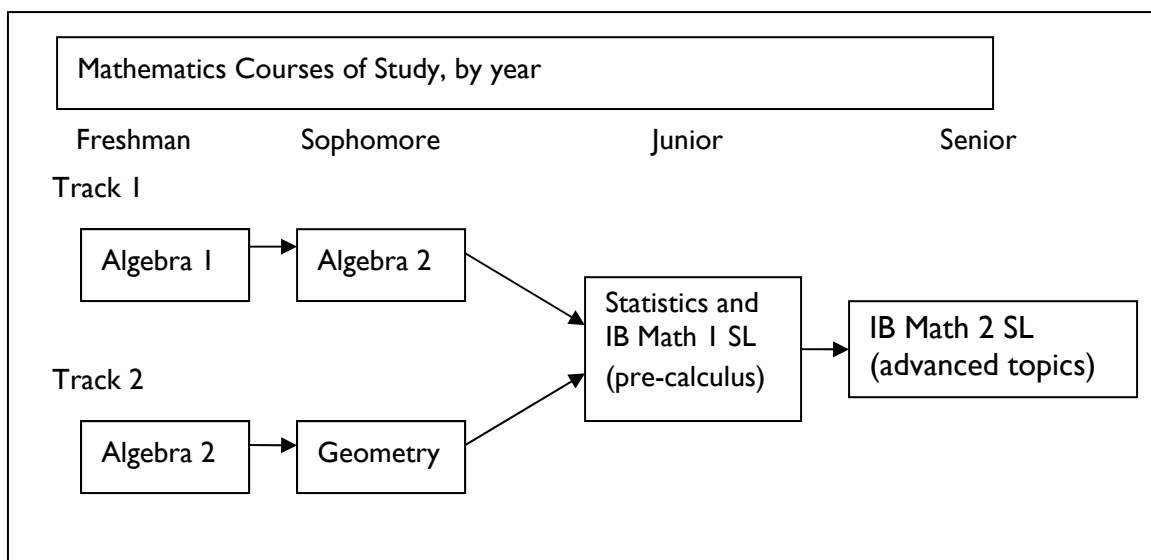
Mathematics

About Our Math Curriculum

The study of Mathematics at Northbrook is incremental and steady. Lessons add new steps to previously taught material as well as review already learned material. It is essential that students make every effort to complete daily assignments. Solving problems day after day is the key to success. Learning mathematics, like learning a foreign language, a musical instrument, or an athletic skill requires **long-term practice** to develop and maintain mastery of the requisite skills. A positive attitude and a commitment to long-term practice greatly improves a student's progress into higher-level mathematics courses. A placement exam is used to determine at which math level a student should begin study while at Northbrook

Northbrook is proud to have adopted the excellent structure of the McDougal Little books for Algebra 1, Algebra 2, and Geometry and are thrilled with their online supplementary materials and books found at classzone.com These wonderful math books are only guides; our curriculum is customized to meet the needs of our students and is enhanced by our small class sizes.

After sophomore year, Northbrook students are expected to transition into the IB Math program. For the first sets of Northbrook graduates, this program begins with IB Math I SL (Standard Level) and be followed by IB Math 2 SL. These courses focus on introducing important mathematical concepts through the development of mathematical techniques. The intention is to introduce students to these concepts in a comprehensible and coherent way. These courses offer a sound mathematical background for students to prepare for future studies in college in subjects such as chemistry, economics, psychology and business administration.



Algebra 1

The Algebra 1 course uses the McDougall-Littell series, which aims at developing a deep conceptual understanding of algebra. The year begins with an initial review of pre Algebra concepts, including operations with signed numbers, evaluating algebraic expressions, the real numbers and their subsets, and properties of real numbers. Much time is devoted to the solution of linear equations with a concentration on problem solving involving consecutive integer, geometry, and distance/rate/time problems.

The year progresses with an in depth examination of linear equations and functions, slope, and graphs, solutions of inequalities, systems of linear equations, laws of exponents, adding, subtracting, and multiplying polynomials, factoring quadratic equations, and an introduction to solving quadratic equations. Additional attention is focused on working with square roots, radicals, and rational equations.

Throughout the year, students apply algebraic modeling to problem solving and learn to examine algebraic patterns from multiple representations: situation, table, graph, equation / rule. The graphing calculator is introduced, and practiced because it becomes an important tool in later mathematics courses.

Prerequisite: Successful completion of Algebra 1/2, teacher recommendation, or through placement exam.

Algebra 2

The Algebra 2 curriculum also uses the McDougall-Littell series, (which aims at developing a deep conceptual understanding of algebra).

The year begins with an initial review of the tools of algebra (solving linear equations and inequalities, linear equations, functions and graphs, and systems of linear equation). Matrices and determinants are introduced and quadratic equations are examined in more depth. Students are introduced to imaginary and complex numbers. Later, students explore algebraic functions (quadratic, polynomial, square and cube root, exponential and logarithmic, and rational functions) from multi-representational perspectives (graphs, tables, rules).

Students are encouraged to start making conjectures and attempting to prove their ideas when examining various theorems, rules or patterns. Additional attention may be paid to right (and possibly oblique) triangle trigonometry and applications. The graphing calculator is used more often throughout this course.

Prerequisite: Successful completion of Algebra 1, teacher recommendation, or through the placement exam.

Geometry

The Geometry course also uses the McDougal Little/ Houghton Mifflin series. The course begins with an introduction to measurement, segments, angles and proofs. Next students learn the need for clarity and concision in proofs, and how to follow a

five step process to draw logical conclusions, and about the manipulation of the properties of angles and segments. The year long course works through congruent triangles, lines in planes, polygons, circles, the Pythagorean Theorem, area, surface area volume, graphing, inequalities, locus and constructions.

Students are encouraged to explore proofs and to try to make their own proofs.

Prerequisite: Successful completion of Algebra 1 or Algebra 2, teacher recommendation, or through the placement exam.

IB Math I SL

This is the first year of the two year IB Math sequence. This course is comparable to a pre-calculus course and thus reviews and extends the concepts studied in Algebra 2 and Geometry, especially polynomial, exponential and logarithmic functions, matrices, and probability and statistics. New concepts include polynomial functions and their transformations, circle trigonometry, trigonometric equations and functions, trigonometric identities. Practical applications, portfolio projects and appropriate use of the graphing calculator will be integrated throughout the course.

Prerequisite: Algebra 2

IB Math 2 SL

This course reviews and extends the topics studied in Mathematics SL I. New topics include vectors in two and three dimensions and vector equations of lines as well as further work with statistics including the normal and binomial distributions, differential and integral calculus and the applications such as graphing, optimization, velocity and acceleration, graphical behavior of functions, areas under curves and volumes of revolution. Practical applications, portfolio projects, and appropriate use of the graphing calculator will be integrated throughout the course.

Prerequisite: IB Math I SL

Summer Math Packets

Just as we encourage reading with our summer reading program, we also have a math packet requirement for students to keep their math skills active over the summer. These packets have a large number of problems that review the past years problem sets and encourage retention of material through long term practice throughout the summer.

English

The goal of English is to develop communication skills through reading and interpretation, writing and analysis, and thinking and discovering. There is a balance of opposites from classical literature, drama, and poetry to modern e-books, movies and the examination lyrics as poetry. Underneath it all is and emphasis on the fundamentals of grammar, vocabulary and spelling.

Throughout the four year high school experience, the works of William Shakespeare will be presented with specific plays chosen by the faculty based on the perceived abilities, interests, and personalities of the students in the class.

World Literature I

World Literature I is one of two primary courses for high school English. Within this course students practice the basics of the writing process including constructing thesis statements and writing essays. They also study grammar and vocabulary. In terms of literature, in addition to examining each work's style, theme, and plot, students look closely at each author's literary work in context in order to reflect on cultural assumptions. Finally students use analysis and discovery throughout their writing, research and oral presentations. The course includes reading selected classics of great authors of the English Language such as: Charles Dickens, George Orwell, Pearl Buck, Ernest Hemmingway, George Eliot, and Mary Shelly as well as works chosen from time to time based on the recognized interests and abilities of the students.

Prerequisite: None or American Literature I

American Literature

This is a rigorous course which examines the development of American culture through literature. American authors and their works are studied chronologically in order to allow follow changes in American culture over time. This course is typically taken at the same time as US History. Students are asked to complete an interdisciplinary project with their US History course which connects an author's work to its historical context. All genres and critical approaches to literature are studied in a sophisticated manner. Students are required to read extensively, to write regularly, and to abide by standard elements of grammar and style.

Prerequisite: World Literature I or 2, or recommendation of teacher

Literature 2

Literature 2 continues on studies of classics begun in Literature I and American Literature I. Students gain increasing comprehension of genre and style as they analyze, interpret, and compare and contrast literature from different cultural and historical contexts. Writing, grammar and vocabulary are all advanced. Students develop their critical thinking skills, write with growing proficiency, and speak with escalating confidence as they make individual as well as group presentations.

Prerequisite: Literature I or American Literature I

Literature 3

Literature 3 continues on studies of classics begun in Literature 2 . Students gain increasing comprehension of genre and style as they analyze, interpret, and compare and contrast literature from different cultural and historical contexts. Writing, grammar and

vocabulary are all advanced. Students develop their critical thinking skills, write with growing proficiency, and speak with escalating confidence as they make individual as well as group presentations.

Prerequisite: Literature I or American Literature I

Humanities in America

This is an interdisciplinary course which studies the human condition across the disciplines of visual and performing arts, technology and science, social studies and religion, philosophy and literature. Students begin by gaining an overview of the study of humanities. Next, students work on an individual project which explores a particular time and place in terms of how changes in one period in history influenced another realm -- such the music of the 1970s and protest rallies on college campuses, or American advertising in the 1950s and Pop Art. Finally students examine their own relationships and culture and create a unique work and presentation which reflects a facet of who they are, and their own humanity. This course requires extensive independent research and reading, and creative analysis across genres.

Prerequisite: American Literature I and American History 2

Summer Reading and One Book One School

Northbrook's summer reading program serves three important purposes. First it encourages the love of reading and the practice of choosing quality literature. Our students are required to read one book of their choice from the list of Newbury Honor or Newbury Medal lists. The second purpose is to accelerate our English classes by getting students to read in advance, one book that is to be taught in the fall. And finally the third purpose is to have all students participate in our One Book One School program which requires every student to read the same book over the summer.

The **One Book One School** program is one of the ways that our students and teachers all come together as a school. Each year one book is chosen that offers a topic or theme that lends itself to cross-curricula activities and learning opportunities. It allows the first month of school to have activities that bring all students together regardless of their grade or background. The topic surrounding the book offers a common thread for communication while building our community and culture in the new school year. This also offers a reference point for community discussions and activities throughout the year. Often our play or musical is linked to the book of the year.

Social Studies

The high school social studies curriculum at Northbrook meets the Massachusetts state requirements for American history, in addition to offering World history courses in religion and humanities that focus on the study of peoples, cultures and meaning systems. At each level students are taught historical literacy skills. They become strong active users of historical texts, documents, maps, lectures and are asked to think

critically. The students practice skills and concepts that apply directly to history, social studies and geography. The basic skills reinforced are reading comprehension, note taking, critical thinking, outlining, essay drafting, MLA (Modern Language Association) research and documentation, notebook organization, test preparation, test taking, public speaking, group work, reading and creating maps and graphs. Time is devoted weekly to discussing and learning about current events.

History of World Religions

World History of Religions is focused on the study the beginnings of the primary religions of the modern world. This course enhances a students understanding of cultural differences and meaning systems across peoples of the world. Students examine how religion played a role in major wars and historical events as well as current events in social studies. .

Prerequisite: None

US History I

The focus of US History I is a study of the history of the United States from the 1760s through Reconstruction in the 1870s. This is a half year course. Topics studied include: the influences of the American War of Independence on American government; the development and role of the Constitution and Bill of Rights in American democracy; America before the Civil War; the Civil War and its impact on the development of the country; Reconstruction, and westward expansion.

Skills essential to the study of history, such as reading comprehension and expository writing, are emphasized throughout the year. Students are asked to complete an interdisciplinary project with their American Literature course which connects an author's work to its historical context. The development of the ability to comprehend cause and effect relationships in history and to approach the connection between current events and the past are major goals in our program.

Prerequisite: None

US History 2

The focus of US History II is a study of the history of the United States after Reconstruction in the 1870s to the present time. This is a half year course. Topics studied include: the Progressive Era and American Expansionism, World War I, the Great Depression, the New Deal, World War II, Civil Rights and the Vietnam War. Special emphasis will be given to the Cold War and the causes, practices, and effects of war.

Skills essential to the study of history, such as reading comprehension and expository writing, are emphasized throughout the year. Students are asked to complete an interdisciplinary project with their American Literature course which connects an author's work to its historical context. The development of the ability to comprehend

cause and effect relationships in history and to approach the connection between current events and the past are major goals in our program.

Modern World History SL

This IB course will include an in-depth analysis of documents from the 20th century including peacemaking, peacekeeping—international relations from 1918–36, the Arab–Israeli conflict from 1945–79, and communism in crisis from 1976-89. Students will also study the causes, practices and effects of wars, the origins and development of single-party states, and The Cold War. At the end of the year students will complete a historical investigation, using the skills of a historian to answer a historical question.

Ethos Explored

Ethos Explored a part of Northbrook's social studies curriculum. This course meets once per week for half a year. A Northbrook high school student is required to have completed at least one half year of Ethos prior to graduation. Usually this is accomplished during their first years of matriculation.

Northbrook believes that producing good students is not just about textbook academic achievements, but should include subjects which help students get along in the world through the appreciation and understanding of diversity, culture, and media.

The word "ethos" is defined by Webster's' 9th New Collegiate Dictionary as meaning "the distinguishing character, sentiment, moral nature, or guiding beliefs of a person, group or institution."

Ethos Explored, is essentially **a look at viewpoints**. It is not just an examination of diversity and culture, but will also include an examination of economics and media which is known to affect viewpoints.

The Ethos Explored classes vary by trimester to examine:

- **Local Experiences:** What are the similarities and differences of the viewpoints of the members of the Northbrook community? What characteristics of the citizens of our local towns and communities are displayed in the media?
- **National Observations:** What distinguishes the people and major institutions across our country and what is the media's role in our observations?
- **Global Explorations:** What about people in various parts of the world...in what ways are their viewpoints similar and different from ours, and what is the media's role in our observations?

Science

The high school science curriculum at Northbrook Academy meets the Massachusetts college preparatory requirements for a minimum of three years of lab science. It is also designed to align with the IB diploma requirements and includes one HL (High Level, 220 hours) science course (Chemistry 2 HL). As Northbrook expands and grows the

science department's offerings will also grow to and be able to offer more advanced courses.

Biology

This year long course uses Prentice Hall *Biology: Exploring Life* to meet the needs of college preparatory work in biology. The course integrates textbook, Web, and labs into a dynamic and balanced program that acquaints students with the diverse world of living organisms and their interrelation.

Students explore the study of cells, inheritance, biological diversity, the microbial world, planets, human structure and function, and ecology. Each concept has an online activity that enables students to explore the same core content interactively.

Physics

This course focuses on the interaction of matter and energy, both in the classical fields and introduction into the modern extensions. Students explore the following topics: mechanics, electricity and magnetism, thermal physics, waves, optics, and atomic and nuclear physics. A strong emphasis is placed upon laboratory sessions that demonstrate these topics and principles.

Chemistry I SL

This year long study of Chemistry explores the laws and properties of matter. Students study the following core topics: atomic theory, periodicity, bonds, states of matter, energetics, kinetics and equilibrium. A strong emphasis is placed upon laboratory sessions that demonstrate these topics and principles.

Chemistry 2HL

This year long HL (High Level) course builds on the concepts explored in Chemistry I. Students will study advanced topics such as molecular structure, bonding theory, reaction mechanisms and kinetics, thermal chemistry, electrochemistry, oxidation and reduction organic chemistry, higher organic chemistry, human biochemistry and environmental chemistry and acid/base theories. The history of the development of chemistry will also be integrated into the individual subject areas. A strong emphasis is placed upon laboratory sessions that demonstrate these topics and principles.

Ecology

Ecology is the study of **living organisms** and how they interact with one another and with the physical and chemical environment. This course meets once per week and is a year long course. In this class, students will examine these interactions in order to better understand the natural world around them. Students spend time in the classroom learning basic ecological principles and then apply these principles through a series of hands-on experiments. In good weather, students go outside to explore the various habitats in order to better understand the unique plant and animal communities that live

in the area. As a result of this course, students become informed citizens who have the knowledge and the environmental sensitivity to help protect our fragile planet Earth.

Prerequisite: None.

Modern Languages

Northbrook is proud to have a rigorous and comprehensive foreign language studies program which expands upon Northbrook Middle School Program and exceeds the Massachusetts recommendations for college preparation. The modern language offered at Northbrook currently only includes studies in Spanish, however students may transfer foreign language credits through summer and other approved programs of language study.

Northbrook Academy will also participate in various exchange student opportunities.

Spanish Studies

Our program includes using the *Realidades* series of textbooks that uses a standard-based approach to balance grammar and communication. The program offers technology designed to integrate language and culture to teach and motivate all students. After the intermediate level, the *Realidades* program is completed and students move into the independent and autonomous levels of language studies. At these levels students read and write about original Spanish documents and literature and prepare for IB assessment criteria.

The Northbrook Spanish program meets or exceeds the **five standard goals** for learning a foreign language including:

1. Communication in a language other than English.
 - 1a. Students engage in conversation, provide and obtain information, express feelings and emotions, and exchange opinions
 - 1b. Students understand and interpret written and spoken language on a variety of topics
 - 1c. Students present information in Spanish, concepts and ideas to an audience of listeners or readers on a variety of topics.
2. Gaining knowledge and understanding of other cultures
 - 2a. Students demonstrate an understanding of the relationship between practices and perspectives of the culture studied
 - 2b. Students demonstrate an understanding of the relationship between the products and perspectives of the culture studied.
3. Connecting with other disciplines and acquiring information
 - 3a. Students reinforce and further their knowledge of other disciplines through the foreign language
 - 3b. Students acquire information and recognize the distinctive viewpoints that are only available through the foreign language and its cultures.
4. Gaining insight into the nature of language and culture

- 4a. Students demonstrate understanding of the nature of language through the comparisons of the language studied and their own.
- 4b. Students demonstrate understanding of the concept of culture through comparisons of the cultures studied and their own.

- 5. Participating in multilingual communities at home and around the world.
 - 5a. Students use the language both within and beyond the school setting
 - 5b. Students show evidence of becoming life-long learners by using the language for personal enjoyment and enrichment.

Beginner Spanish I SL

The Northbrook Spanish program of study begins with the Spanish I SL (standard level) course which uses *Realidades 1* textbook and online classroom. This is a full year 4 days per week course. It is for students with limited (or no) previous Spanish classes.

The Beginner Spanish I program follows the foreign language standards across ten units. These units serve to introduce a new student to the language and culture. .

Prerequisite: None. Students who have had some Spanish prior to Northbrook are required to take the placement exam.

Advanced Beginner Spanish 2 SL

Advanced Beginner Spanish 2 SL is a combined course with Northbrook's Middle School Spanish 3. It brings the students into more complex vocabulary and grammar and uses *Realidades 2* textbook and online classroom. . This is a full year 4 days per week course.

The Advanced Beginner Spanish 2 SL program follows the foreign language standards across ten units. These units serve to continue students' understanding of the Spanish language and culture. This fast-paced course has a heavier emphasis on grammar, particularly the many conjugations and tenses of verbs and irregular verbs, commands, but many of the vocabulary words are recycled from Spanish I SL. This course includes learning about being a tourist and the language needed to travel to a Spanish speaking country.

Prerequisite: Successful completion of Spanish I SL (with a grade of a C or above), Northbrook Middle School Spanish 2 or through a placement exam.

Intermediate Spanish 3 SL

Intermediate Spanish 3 advances Northbrook students to the final level of Pearson's *Realidades* program. It uses *Realidades 3* textbook and online classroom. . This is a full year 4 days per week course.

The Intermediate Spanish 3 SL program follows the foreign language standards across ten units. These units serve to continue students' understanding of the Spanish language

and culture. This course continues to emphasize rules of grammar and focuses on the advanced conjugations and tenses of verbs and irregular verbs. It completes the careful foundation in Spanish through a continuous review of grammar and vocabulary found in earlier Realidades courses. It also includes the three IB modern language core requirements of: communication and media, global issues, and social relationships.

Prerequisite: Successful completion of Advanced Beginner Spanish 2 SL or Middle School Spanish 3 (with a grade of a C or above), or through a placement exam.

Advanced Spanish 4

The Advanced Spanish 4 course is for students who wish to prepare to take their AP or IB SL exam in Spanish. Students use their previously acquired skills of listening, speaking, reading, and writing in a variety of formats. Grammar, and vocabulary are studied using content from various sources, including DVDs and live media such as that available through Internet and Spanish language television.

Skill Builders and Scholar Makers

Skill Builders and Scholar Maker class are courses that meet only one day a week. The Skill Builder Program includes our Study Power and Subject Aid in addition to individual practice using academic achievement skills such as drills, researching, and test taking techniques and practice. The Scholar Makers Program includes classes that meet once a week to offer additional focus on reading, writing, math, technology, science (Ecology) or social studies (Ethos).

Study Power

To further develop their study skills, all students take at least one semester course of Study Power in which they are taught basic study skills, organizational tools and methodologies that will help them excel in their academic pursuits.

This course is based upon the *Study Power* book and workbook written by William Luckie & Wood Smethurst which, in turn, is based upon the study skills taught at Harvard and Emory Universities. A quote from the book: "It turns out that school success is not related in any direct way to intelligence, quickness, ambition, or any other such characteristics. Primarily, it comes from the ability and desire to manage work and time effectively. . .It's as if you could, by practice, make yourself smart."

Subject Aid

Every day all students have a period in which all primary teachers are available on campus to offer **personalized aid** in their subjects. This period is similar to the "office hours" conducted by professors in universities. Utilization of this time is the key to the rigor of a Northbrook course. If a student has any trouble at all understanding a concept or subject, they can use this time to enable him or her to seek the assistance they need to succeed.

This also allows teachers to teach to the highest level of students, knowing they can

address slower learners' needs during a subject aid period. Students may also utilize this time to work with **peer tutors and study buddies** to collaboratively enhance their comprehension and to study for pending exams. It is a period in which students study skills are reinforced and monitored.

Research and Study Skills

The Study Skills curriculum is embedded within the daily Subject Aid period. Teachers in each of the primary subjects use a study skills program to set student's expectations on how to prepare for exams in their classes. Study skills topics include: note taking, locating main ideas, outlining, understanding tables and graphs, and library skills such as use of computers, indexes, card catalog, reader's guide and atlases. The culmination of work in this course is a fully annotated independent research paper prepared on their topic and in close cooperation with the teachers. This is in alignment with the standards for independent research expected from an IB Diploma candidate.

Math Lab

Our Math Lab is run within our Subject Aid period and it provides individualized remediation or enrichment for all students. Small groups work on a particular problem set either with a peer tutor (from an upper level math class) or a teacher.

Scholar Maker: Reading

In order to encourage **a love of reading**, Northbrook's reading program requires students to always have an independent reading book of their choice so that they may use their unscheduled time for reading. The Reading Scholar Maker Course meets weekly to monitor students' progress with their independent reading. The meeting is also an opportunity to enhance the comprehension of novels that are taught in English class and to read and discuss short stories within **a literature circle** and discussion group.

Scholar Marker: Math Tech

Math Technology is a course which begins by covering the fundamentals of using the Tech Lab at Northbrook Academy. It covers all the tools needed to be a successful Northbrook student. This includes review of Internet Acceptable Use Policy and how to use the Northbrook Network for document sharing and printing. Students learn the Northbrook Format for all typed written papers while practicing word processing. They also learn the basics of presentation software which is a common format required for school projects and presentations. A number of lessons are spent working with spreadsheets to apply principles and operations learned in Math. Understanding the basics of computers is also necessary; and students enjoy dissecting old computers to discover the relationships of internal hardware devices. While we offer a state of the art Tech Lab that is PC based utilizing desktops, students are allowed to use their own laptops and learn how to follow lab rules while being device independent.

Scholar Makers: Writing

Through our writing program students become aware of the omni-presence of writing and develop the scholarly skill of seeking continuous improvement in their own writing.

One day a week, English class is dedicated to writing instruction based upon the John Collins methodology (plan, draft, review, rewrite). However writing skills are emphasized throughout the Northbrook curriculum. Teachers work with students to “write to learn,” not just to “learn to write.”

Primary and secondary subjects including art present a written assignment as class work or as homework that requires a thoughtful written answer. While many interesting questions are covered as class discussions; (a luxury made possible by our small classes) writings becomes the prompts for more in depth discussions because they force the writer to clarify ideas and to organize thoughts-- where as verbal responses can be more impromptu and colloquial. An individual student has a writing portfolio that collects works across the curriculum and shows development over time.

Scholar Maker: Ethos (See description under social studies curriculum)

Scholar Maker: Ecology (See description under science curriculum)

GRASP (Grow, Reach, Achieve, Succeed, Prevail)

Northbrook acknowledges that not all students find the academic world easy to navigate. GRASP puts academic success back into the hands of students. The mission of GRASP is to offer all Northbrook Academy students the full experience of a challenging college preparatory academic environment by **providing proven supports necessary for success**. Students admitted to the GRASP program will work under the guidance of the Director of Enhanced Learning. The **GRASP** program includes:

I. Weekly meeting with a personal advisor to:

- learn about personal strengths and weaknesses as well as strategies for improvement
- discuss individual course challenges
- improve organizational skills
- facilitate time management
- ensure academic and social adjustment
- review progress and assessments
- offer any additional support needed
- facilitate as liaison between student , teacher and parents

2. Weekly small group meeting with other students and a personal advisor to:

- share experiences
- celebrate successes
- discuss struggles
- develop strategies
- express concerns
- receive support

3. Small group, supplemental written language program for qualified students using a researched based, multi-sensory program from **Project Read**, to improve understanding of written language rules and use of English sentence structures. "This (Project Read) written expression curriculum and instructional strategies inspire and energize students as they learn the fundamentals of writing."

"This curriculum teaches written language sequentially and systematically coupling creative freedom with direct multi- sensory skill instruction. Instruction moves from barebones sentences through five kinds of paragraph development. Knowledge gained gives wings to creativity and independent thought."

Additional learning services beyond the **GRASP** program are available through a private contract. These include (but are not limited to):

1. **Fast ForWord** program by Scientific Learning. This unique computer software develops adolescent literacy. When it is used regularly and frequently it provides learners with measurable language improvements.
2. **Private Instruction**
3. **Diagnostic Testing**

Visual and Performing Arts

The Visual and Performing Arts are essential components of the Northbrook curriculum because they encourage creativity and self expression, require self discipline, and develop self confidence,.

Visual Arts

Visual Arts instruction includes: Studio Art and Sculpture, Digital Photography, PhotoshopArt, Sewing/Costuming, Graphic Arts and Video Production. Each spring there is a Student Art Show within our annual Variety Show. Students are expected to complete at least one visual art class each year.

Studio Art and Sculpture

This course meets once per week. It is offered throughout the year and may combine students across various grades. While the content varies year to year, the components remain similar. Each year there is one unit on a period in art history, one on sculpture and 3d art and many lessons on drawing (using various tools) and a unit on painting with canvas and acrylics.

Prerequisite: none

Digital Photography

This course meets once per week. It is offered throughout the year and may combine students across various grades. Students begin by becoming more comfortable working their cameras. They learn about the viewfinder and lenses and how to frame and to "see" their subjects differently. With weekly assignments students are challenged to photograph things from different perspectives and close up, concentrating on details,

textures, shape, colors and contrast. They learn about studio photographic lighting and take photos of still life compositions. They learn about the challenges and requirements of portrait photography. Throughout the course they practice basic skills and learn the language of photography.

Prerequisite: Access to a digital camera and the ability to turn in assignments on portable media such as a CD or memory stick.

Photoshop Art

This is a single semester course offered on alternative years. It meets once a week. The fundamentals of Photoshop are taught and students choose a photo to manipulate and modify in order to meet an artistic objective. Students learn the differences between digital images and printed images and must produce a printed work for display in the school. This course usually includes a trip to a professional photography laboratory to study photographic output from their digital works.

Prerequisite: Successful completion of Digital Photography or recommendation from a teacher. Students need a license to Photoshop software and a laptop.

Graphic Arts

This is a single semester course offered in the spring semester each year. It meets once a week. This class begins with the basic principles of good design and moves on to support independent projects such as programs and poster designs for Northbrook performances. Students are also challenged to learn the language of graphic art such as visual elements (of line, shape, color, hue, value, intensity texture, direction and size) movement, balance, emphasis and unity.

Prerequisite: Successful completion of one semester of Math Tech or recommendation of a teacher.

Video Production

This is a single semester course offered in alternate years. It meets once a week. This class is for students who have had at least one term of theater. Students examine issues with film compared to stage. They work using basic home digital video cameras. Students work in teams and are responsible for creating video shorts to be presented at the Northbrook Annual Variety Show. Students create PSAs (Public Service Announcements) or commercials and may work with the Music Tech class to prepare a music video. In the tech lab, students use readily available software, such as Microsoft Movie Maker, to do simple post production video editing.

Prerequisite: Successful completion of one semester of Math Tech and Theater or recommendation of a teacher.

Performing Art**Music**

All students take at least one music class each year. In addition to teaching the basics of notation, music theory and music history, Northbrook students also have a number of opportunities to explore their ability to create music.

Ensembles

Northbrook Academy has had various ensembles as large as a concert orchestra and a string chamber group to small quartets, trios and duets. Most students who have played an instrument longer than one year are encouraged to complete at least one semester of ensemble work because the skills learned are important for any musician. Students in ensemble learn how to play in a group and to follow a conductor. This class sets expectations of musicianship which include: set-up and preparation for rehearsals, rehearsal behavior, working with a stand partner, understanding direction of a conductor, and performance etiquette.

Prerequisite: One year of instrumental lessons, or recommendation of a teacher

Rock Band

Northbrook Academy's rock band is another form of ensemble. The difference is that the band has a director but not a conductor and it has vocalists in addition to instrumentalists. Also, the electronic component of a rock band (such as microphones, mixers, speakers, and amps) requires members of the band who are not performers but who work on the sound behind the scenes. In addition to preparing for a performance, the Rock Band learns about recording and produces at least one recording a year.

Prerequisite: None

Show Choir

Northbrook's Show Choir is a singing group centered upon performance. Students learn to mix solos with choral harmonies and all songs are choreographed. This group performs not only at school events but also when invited to sing in our local community such as at nursing homes and fundraising events.

Prerequisite: One year of vocal experience, or recommendation of a teacher

Music Fundamentals

This is an introductory music course that teaches (or reviews) the elements of music such as tempo, meter, intonation, and tone. Notation for the bass and treble clef is also taught along with the basic motions of conducting. Some elements of music theory are also discussed though the emphasis of this course is on fundamentals. Students do project work, each studying and presenting a different composer.

Prerequisite: none

World Music

This semester long course reviews music from all over the world. Students research various countries and watch video performances of various music types. There is a particular focus on recognizing how themes and rhythms from certain cultures traveled into other cultures, such as how African rhythms arrived in America. Students listen for drumming rhythms throughout the music and watch for uses of similar instruments such as violins and guitars. Students are asked to try to interpret songs of other languages and to decide which emotions are evoked (without translating the words). This exploratory course opens up the giant world of music and at the same time makes the world smaller through recognizing similarities and how music is a universal language.

Prerequisite: none

Music Technology

This course teaches students: Audio Basics, Live Show Engineering, Multi-track Recording, Audio Editing, Digital Music Production. Students work to learn to answer some very technical questions about music, such as: What is a sound wave, frequency spectrum, or decibel? Can you tune a guitar or repair an xlr cable? In this class, students work to build the knowledge it takes to be a good Soundperson. There is also be lots of hands-on experience as students learn to set up equipment from microphones to mixer, amp to speakers for a great sounding live event.

In the Northbrook Studio, students learn the exciting art of professional recording, mixing, and mastering. On the computer, it's editing of speech and sound effects, while musically, we will each get to create an original song for our own digital CD project using drum machines, synthesizers, samplers, and a multitude of audio effects. In addition there is a group project which requires students to invent, record, and import sound effects to create the background sound in an old slapstick comedy clip.

Prerequisites: none

Dance

All students take some dance as part of the Northbrook curriculum. At Northbrook, dance is both a part of Physical Education (PE) as well as the fine arts.

Dance is an art as well as an athletic endeavor. At Northbrook, dance is an important way for students to develop poise and confidence with their rapidly growing bodies. It is also a very fun way to exercise to music.

Northbrook's dance program is for beginners as well as students who have studied dance for many years. The class meets one to three times a week.

During the beginning of the semester students develop basic skills and confidence in their ability to move to music. Very quickly students begin to work on routines that will be featured in the Annual Northbrook Variety Show. Students who take dance outside of school are also invited to perform their routine in the Variety Show. This gives

advance students the opportunity to do solo work and hone their individual performance skills. Work done in third term is incorporated into the spring musical as a dance number.

Northbrook has been open to a variety of dance styles. Dance classes have included instruction in modern dance/ hip-hop as well as classic dance/ ballet. For the 2009 production of "The Green Teen Group" students were able to perform three unique styles of dance: a "**Stomp**" routine using basketballs and masks, a "**Poi**" routine spinning glow lights to music, and a "**Black Light Theater Stick-figure**" routine.

In PE **all students learn to waltz** in the spring. It has become a tradition at graduation to have "the white gloved gentlemen escort their fellow ladies" in a grand waltz that culminates the year and begins the graduation celebration. *While this tradition may seem "old fashioned", many of our alumni have remarked how thankful they were to at least have some experience partner dancing before attending their semi-formals, proms, and family weddings.*

Prerequisite: none.

Performance Choreography

Advanced dance students may choose to work with a director and create the choreography for an upcoming Northbrook performance.

Prerequisite: Three years of dance and recommendation of a teacher.

Public Speaking, Debate and Theater

Public Speaking

Northbrook students are expected to complete at least one semester of public speaking. This course prepares students to speak in public through a number of small speeches (starting at one minute) and a final five minute presentation. Students learn about vocal inflection, body language, and posture while speaking. In addition this class offers students a chance to research and prepare to speak on personal or controversial topics as well as current events.

Prerequisite: none

Debate

Debate is offered to students who have completed at least two semesters of public speaking. Students learn the basic concepts of debate and practice excellent research skills in their debate preparation. The semester ends with a "Great Debate" competition.

Prerequisite: Two semesters of public speaking.

Theater

All students take theater as part of the Northbrook curriculum. Students learn self confidence while playing theater games to develop improvisation techniques. They learn to appreciate theater by attending a local performance. They pay attention to the “world beyond the actors” by trying their hands at direction, scenery, props, stage management, sound and promotion. Theater is not just about performances. At Northbrook, theater extends beyond the stage and flows equally into many other subjects.

For example, Northbrook students visited Framingham State College to participate in the “Bose In Harmony with Education” Program where they studied the **science of sound** before building their own instruments for their 2008 musical production of "The Green Teen Group." In **math class** the Northbrook students predicted the length of a tube needed to produce each note on the musical scale (a measurement needed to build their Tubulum).

The 2009 musical, "Annie Jr." highlighted some of the issues of poverty in New York City that 8th grade **English Literature** students also read about in *A Tree Grows in Brooklyn*

The 2010 play, "A Load of Rubbish", tied intimately into the students' CoastSweep beach cleanup, and their **ecology class** studies of recycling and waste management. Throughout the year the play will act as a point of reference for all students as they participate in Earth day projects, and study the **science of water**.

The 2012 musical, “Northbrook’s Little Mermaid” was tied to our **One Book One School** study of *The Music of the Dolphins*, and a reading/writing assignment which was a comparative study of Hans Christian Anderson’s *Little Mermaid* with the Disney version. In addition the school enhanced this study with and a field trip to whale watch in Plymouth.

Prerequisite: none. *Performances require auditions by all actors and actresses; a commitment to rehearsal and performance dates is required to hold a role in a show.*

Musical Theater Performance and Production

During spring term every year the Northbrook community comes together for its musical production. This performance is also the center of other arts classes in the spring. For example, studio art classes work on props, scenery and costumes. Dance classes work on choreographed routines for the show. Ensemble work is focused on musical songs and chorus is made busy preparing songs for the choral numbers. Students are involved in all aspects of the productions both on stage and back stage, pre-production and post- production including: set building and striking; lighting and sound; curtains, sets and drops; marketing, ticketing, programs and box-office; and costume management. Each show also has a student stage manager and student assistant director in order to allow students to develop these important management skills.

We cycle our style of productions over three years in order to allow students to explore unique performance opportunities. One year we will write our own show, the next perform a well known Broadway style show, and the next a lesser known show

Prerequisite: none. *Performances require auditions by all actors and actresses; a commitment to rehearsal and performance dates is required to hold a role in a show.*

Health and Wellness and Athletics

Northbrook Academy takes its focus on mind, body and spirit very seriously. In addition to rigorous academic studies, Northbrook students benefit greatly from plenty of physical exercise and from the lessons learned by challenging themselves physically and mentally through participating in a team sport. All students are required to participate in the health and wellness program throughout the year.

Our varied program includes offering some form of exercise or instruction every day of the week during our co-curricula time. In addition to using the Pierce Fields as part of our extended campus, we enhance our offerings by utilizing the Lindsay Gymnasium during the cooler fall and winter weather. Students may earn Health and Wellness credits through participation in health and wellness classes, intramurals and fitness as well as through dance and our competitive athletic sports of cross-country, basketball and lacrosse.

Promoting health and wellness for all students is the shared responsibility of families, schools, communities and students themselves. To that end, the Wellness effort at Northbrook Academy strives to help create programs and educational strategies for all constituencies on a regular basis to address any matter that might enhance or improve the well-being of the student. The program recognizes that coaches, activity advisors, health educators, athletic directors, team captains and other athletes are powerful role models for youth. These potential leaders have a unique opportunity to set a positive example and help students make healthy life choices.

Intramurals and Fitness

Northbrook Academy has created many opportunities for students to develop their personal fitness through participation in sports through a variety of Health and Wellness programs which include a variety of intramural sports/activities throughout the year, such as:

- Fitness Running: Not all students can commit the time to run as part of the cross-country team, but most anyone can run for fitness. There is a great deal of pride when a student watches their times and performance improve when focused on fitness running.
- Basketball: Instructional ball games and the rules of the sport are taught at the gym and students enjoy playing games.
- Kickball: Students form teams and play spirited games out in the ball fields.

- **Tennis:** In the spring, when Northbrook utilizes the Pierce Fields for Health and Wellness, they use the tennis courts to teach basic tennis rules and to encourage intramural game play.
- **Street / Floor Hockey:** The game plays and basic rules are taught as part of Health and Wellness classes and many students enjoy playing hockey indoors and outdoors in the spring.

Health and Wellness I and 2

In addition to fitness activities, there are a variety of classroom topics which comprise two semester courses which will be required of all Northbrook High School students. Topics covered in these semesters include: alcohol, smoking and drug abuse prevention, human sexuality, circle of life, nutrition, first aid and CPR, social networking and internet safety, outdoor education, and character education.

Prerequisite: none