

2005-2006 Nichols Upper School Curriculum

Graduation Requirements

To receive a Nichols diploma, students must earn a **minimum of 25 credits** (a full year course or its equivalent in semester courses constitutes one credit). The normal course load during grades 9-12 results in a total of 26 credits.

English (4 Credits)

Students must take English every year. Senior English consists of two semester elective courses.

History (3 Credits)

Students are required to take Ancient World History in 9th grade, Modern European History in 10th grade, and U.S. History in either 11th or 12th grade.

Science (3 Credits)

Students are required to take Physics in 9th grade, Chemistry in 10th grade, and Biology in 11th grade.

Mathematics (3 Credits)

Students must pass *Precalculus* or *Algebra III with Trigonometry* in order to fulfill requirements, except as noted in the next section. Registration for a senior elective in mathematics is contingent upon completion of *Precalculus* with a C or better.

Foreign Language (3 Credits)

Students must successfully complete the third year of any one language (except as noted in the next section).

Arts (2 Credits)

- Students are required to take one credit of Arts in the 9th grade year and one credit in the 11th or 12th grade.
- 9th Graders can fulfill their requirement by taking Freshman Survey of the Arts.
- 11th and 12th Graders may

complete their requirement by taking Chorus, Orchestra, or a full-year arts elective.

PE/Athletics (2 Credits)

Each season (fall, winter, spring), all students are required to take physical education or a Nichols dance class, be a member of a sports team or its manager, or are granted a contract sport by the Director of Athletics.

Electives (3 Credits)

Senior Project (Pass or Honors)

In the second semester of the senior year, Nichols students are required to research and develop a project that will facilitate meaningful learning to culminate their Nichols educational experience. Students research and write a proposal for their project, which is reviewed by a faculty committee who provides oversight to the proposal process. Following senior exams in mid-May, students begin their three-week senior project. The projects conclude with a senior project night in the first week of June. The senior project is a graduation requirement which receives a pass or fail grade. The senior project coordinator is Mr. Potter.

Additional Requirements

- In Math and Foreign Language, students may satisfy their requirements in each department if they have completed level three (in FL) or Precalculus by Junior year. In the event that a student completes both Math and Foreign Language requirements by the end of 10th grade, the student is then required to take at least one advanced course in either department before graduating.
- Sophomore Elective - All 10th

graders are required to take either two semester electives or a full-year course. The Arts Department offers *Foundations of the Arts* electives in Visual Arts, Music, Theater, and Dance. Chorus, Orchestra, or the beginning of a second Foreign Language will fulfill this requirement.

- Course

Minimum/Maximum - Juniors or Seniors must take a minimum of five courses, and they must pass all those courses in their final year. This requirement negates the use of the "wild card" credit during senior year. Only the Academic Review Committee (ARC) may approve six courses, schedule permitting.

AP Exam Policy

Any student whose cumulative average in an AP course is below B- two weeks prior to the AP exam will be required to take a departmental final exam in addition to (or, with the instructor's permission, in place of) the regular AP exam.

Drop/Add Procedure

After the beginning of the year, adjustments are made to students' schedules, such as changing from AP to regular math or dropping a difficult sixth course. Only in very unusual circumstances, and only with the approval of the Academic Review Committee, may a student drop a year-long course after the third week of school or go below five courses. Students dropping a year-long or semester course after the second week of the marking period will have the designation of "withdrawn passing" or "withdrawn failing" on their transcript, unless that designation is waived by the Academic Review Committee.

Course Descriptions

THE ARTS: Drama, Music, Visual Arts, Dance

Nichols requires all students to participate in the fine and performing arts. We feel no education is complete without a profound understanding of the arts, and that understanding is best gleaned from hands on involvement in the creative process. In addition to offering students formal instruction in the arts, extracurricular activities are available in theater, music, and dance.

Upper School Arts Requirements

- In Grade 9, **Freshman Survey of the Arts**, a comprehensive, interdisciplinary course is required. Students are exposed to dance, music, theatre and the visual arts. Survey of the Arts emphasizes a shared vocabulary amongst all of the art disciplines. Double class periods may be used for guest artist visits and presentations. The course involves a rotation through the music, theatre, dance and visual arts mediums. Students may also take chorus, orchestra or dance for credit.
- Many students in grade 10 choose to take an art elective, Chorus, or Orchestra in order to fulfill the sophomore elective requirement

- In Grade 11 or 12, students take an additional arts elective in either or both years.

Dance Electives (Grades 5-12)

Students in the Nichols Dance program choose classes that meet personal goals – physical fitness, artistic composition, or a broad base of dance study – and receive physical education and/or artistic credit. The minimum requirement is 3 studio hours per week to attain PE credit. If a student takes an additional 4 hours of classes per week they earn an Arts Credit as well as a P.E credit. Courses offered are Modern Dance (beg-adv), Ballet (beg-adv), Choreography and Improvisation (fall/winter sports trimester) and Repertory (Spring Trimester). Yoga, Stress reduction and Cross Training/Conditioning are offered at special times in the year to coordinate with academic testing and the beginning of new periods of study. The Nichols Dance Ensemble is the performance group at school; they present their own work at the "Choreographers' Showcase", and also perform at the "Spring Dance Concert". Other opportunities for performance are the Holiday Assembly and special school festivals, forums, and functions. Students learn from professional dancers and guest artists working with Pick of the Crop, a professional modern dance company that rehearses at Nichols. Advanced or more serious dance students are given the opportunity to audition for the Seedling Company, a dance group comprised of high school students from all over Western New York wanting to focus on preparing for a college major in dance or professional dance auditions.

Chorus (Grades 9-12)

The repertoire comes from many traditions and genres (e.g., Western European Baroque, Musical Theatre, Zulu and Kenyan Folk Music, music of the great masters sung in the original languages). Singers attend regular rehearsals and small voice labs. Proper performance practice and age appropriate vocal techniques are stressed. All groups perform at two annual school concerts, Cabaret, for many school-related functions, and often in the community. The Great Lakes Arts Festival is a highlight of the choral season every other year. Students should plan on a year-long commitment to this ensemble.

Orchestra (Grades 9-12)

A year-long commitment, Orchestra is open to players of string, wind, brass, and percussion instruments. Music from Baroque, Classical, Romantic and Modern era is performed. Developing aesthetic sensitivity, the proper technique, timing, tone, and interpretation are stressed. Each student is evaluated in a weekly lesson lab. Performances include a minimum of two instrumental concerts and, possibly, the Great Lakes Arts Festival. The Jazz Band, an extracurricular activity, meets twice a week after school to prepare for performances throughout the year.

Sophomore Arts Electives: Foundations of the Arts

Acting Styles (Fall)

Building on Survey of the Arts Theatre, students will apply learned principles to specific theatre styles. With an emphasis on understanding the world of the play, students will be asked to analyze how historical and social factors shape character.

Performance Technique (Spring)

Students will learn to apply vocal and physical acting technique, as

well as character and scene analysis, to performance projects, original monologues and scenes.

Design and Composition (Fall)

Using a variety of drawing, painting, printmaking, photographic and digital art making tools, students will learn how to initiate, develop, and produce original art works. The emphasis in this course will be to identify the foundations of art and use its vocabulary to creatively solve problems. The vocabulary of design – elements and principles such as line, shape, form, texture, and balance, unity, emphasis and rhythm will be explored through classroom projects. Projects in this class will range from drawing to computer art; an emphasis will be placed on digital art tools. Students will be introduced to digital video and photography along with digital imaging software such as Adobe Photoshop, Illustrator, and PageMaker. Major projects in this class will include a 'zine or artist book and a web site.

Advanced Design and Composition (Spring)

Building on the Fall Design and Composition class, this class will continue to explore the elements and principles of design. Students will produce a portfolio of work ranging from drawings and paintings to photographs and digital art. An emphasis will be placed on multimedia art making techniques such as collage and animation and mixing art making materials such as digital photography, drawing and paint.

Exploring Drawing (Fall)

"Drawing is the basic language of Art." This drawing course will introduce the student to a variety of materials and techniques and help them understand what drawing is and its importance. The students will complete a variety of projects

that will not only improve their techniques but also their visual communication skills. By experimenting with mediums such as pencil, charcoal, and pen and ink, the students will enhance their ability to look and see selectively while developing their artistic skills and talents.

Exploring Painting (Spring)

Suggested pre-requisite: Exploring Drawing. This course will introduce the student to one of the most natural forms of human communication, painting. Students will learn how paintings are constructed, how to evaluate what artists do, how to talk about art, and how to use tools and media to create their own kinds of visual expression. The students will work primarily in watercolors and acrylics in completing works that will enhance their understanding and appreciation of this art discipline.

Guitar and Keyboard Exploration (one semester, fall and spring)

Do you own a guitar or keyboard and would like to learn how to play it? This course will help you to learn how to read, play, and compose music. You will listen and study different styles of music as well as create your own original compositions. The class will also include appropriate field trips.

World Dance (Spring)

This course will focus on traditional expressions of non-Western movement. Students will be introduced to dances that are kinetic traditions – movement that passes on a cultural and historical identity. These are the diverse expressions of our global environment. Movement will be experienced both physically and by viewing video example. Topics will include African, Indian, and Asian forms. Students will also experience an introduction to yoga and tai chi.

Survey of American Musical Theater (Fall)

Students will explore the history and art of American musical theater from its earliest instantiations: vaudeville, burlesque, comic opera, minstrel shows, operetta, musical comedy, rock opera, and more contemporary forms. The class will view films or videos of important productions, examine photo archives, research past reviews, listen to cast recordings, read scripts and scores, attend several live stage productions, read from a wide array of sources, write several short papers, and work on personally selected final projects. Interest in musical theater is helpful, but no prior experience viewing or performing musical theater is required.

The American Songbook: Survey of American Jazz Standards (Spring)

Students will explore the songs of Harold Arlen, Irving Berlin, Hoagy Carmichael, Jerome Kern, Cole Porter, George Gershwin, Richard Rogers, Sammy Cahn, Duke Ellington, and dozens of other composers whose songs have become part of the popular American song canon. We will listen to and analyze scores and recordings by Frank Sinatra, Tony Bennett, Ella Fitzgerald, Sarah Vaughan, Billie Holiday, Nina Simone, Dinah Washington, Mel Tormè, Shirley Horne, Rosemary Clooney, Nat King Cole, Louis Armstrong, The Hi-Los, the Four Freshman, Manhattan Transfer, New York Voices, Jackie & Roy, Diana Krall, Susannah McCorkle, and many other jazz and cabaret artists whose interpretations of these standards have become part of our cultural literacy. An interest in vocal jazz will be helpful, but no prior experience listening to or performing this repertoire is required.

Junior/Senior Arts Electives

Acting I: Introduction to Acting Technique

With an ensemble approach, students will study and apply the principles of Stanislavski to scripted scenes and monologues. Also, students will participate in the Spring Film, and create a performance piece for a holiday assembly. Suggested prerequisites for this course are Foundations Acting Styles, or Performance Technique.

Acting II: Advanced Acting Technique

This class is available only to seniors who have completed Acting I or who have been granted special permission from the instructor. While the first semester will focus on the Sanford Meisner technique, the second semester will focus on conceptualization and performance. Students will create and act in a small ensemble play in the spring.

Dance History

This course will explore different historical and aesthetic approaches to dance as it appears on stage. Topics will be classical ballet, modern dance, and musical theater. Students will physically experience different ways of moving their bodies in these performance styles. The students will also view examples of choreography on video. Different choreographers and eras will be discussed in terms of artistic choices made by the individual artist. This typically illuminates how a choreographic work is an expression of both the time period of creation and the personal experience of the artist.

Technical Theater

Ideal for juniors, students will meet for one double period per cycle in this yearlong course. With the guidance of the instructor, they will learn the basics of technical

production through lecture, demonstration and hands-on experience. In addition to the work students do within the double period, all members of this class will be required to:

- i.) Run morning meetings (lights, sound, video set-up)
- ii) Work Fall Play
- iii) Work Spring Play
- iii) Work Assemblies

All registered students must have permission of the instructor. Students who complete this course will be eligible for further independent study in Theatrical Design.

Photography

The photography course takes the application of image reproduction and photographic techniques and applies them to the very simple and complex techniques available to us. The course starts with basic pinhole camera construction, and black and white traditional photography for the first semester branching out in the second semester to introduce digital imaging, electronic transmission and image analysis. Emphasis will be placed on development of a photographic portfolio that will include 25 quality works. Students are required to have a 35mm SLR camera for this class. Digital cameras are useful but not required.

Digital Video/Film Making

This course challenges students to use the tools of digital filmmaking in the production of thought provoking and meaningful work. The use of digital video cameras, lighting, microphones, audio editing software, video editing software, and postproduction techniques will be introduced and taught through projects. Students will be asked to produce several short original works in a range of genres that include documentary, experimental, narrative, performance/video art

and journalism. In addition to digital video, super 8mm film production, wet processing, and hand coloring are explored.

AP Studio Art, 2D design

AP Studio Art, Drawing

AP Studio Art, Photography

A capstone course, this class seeks to build on techniques and concepts that students have acquired in past art courses in the production of new work. The major project in this class is to produce a concentration of work; a series of work, 12 pieces based on a central interest. The concentration should develop a theme and challenge the maker and viewer with complex aesthetic and conceptual ideas. Students will be required to complete a portfolio of at least 25 works. The portfolio includes a concentration (12 pieces), a breadth (12 pieces) and 5 works selected for quality.

Painting (Introductory, Advanced)

An introduction to the concepts, skills, methods, and work processes needed to explore the potential of painting. Students work primarily with acrylic paints on canvas, but also experiment with a variety of materials on paper, including relief work and three-dimensional forms. Students are required to complete a minimum of four canvases in a variety of styles and techniques. Class discussions and critiques help evaluate work in progress and gauge a student's success. Advanced Painting expands on the principles and techniques taught in the introductory course.

Sculpture (Introductory, Advanced)

Beginning students are introduced to problems and concepts particular to three-dimensional art. An overview of the processes, tools, and materials used in sculpture, including the use of paper, wood, plaster, clay, and metal will be explored. Advanced students will investigate the

relationship of ideas to materials and construction techniques in the 3-D format. This course provides an opportunity to develop and expand one's own individual imagery. Periodic critiques to discuss progress are conducted by the teacher, along with class participation.

Jazz Music - A Truly American Art Form

We will trace the development of Jazz Music from its beginnings in Blues and Ragtime to its influence on the music of today. A study of Jazz Music provides a greater understanding of the development of the American personality. The class will also attend live jazz and blues performances in the area.

Music Theory

Students must have 2 years minimum of instrumental or vocal practice. Designed to aid the students with music reading skills through the study of the structure of music. Emphasis on rhythms, simple and compound meters, scales, key relationships, intervals, chords, interpretive markings, and score analysis.

English

The Upper School Department of English seeks to develop refined skills in literary scholarship and articulation. These skills include responsive reading, graceful writing, and intelligent, confident self-expression. All students are required to write at least 500 words a week. Overall, the department strives to inspire students with the passion for scholarship – the excitement that springs from understanding and seeking the synthesis of ideas.

Grade 9: Foundations of World Literature

Foundations is an introductory course in composition and world literature. The program in writing provides a review of paragraph structure and introduces short expository or analytical essays. In literature, readings in poetry and short fiction build critical attitudes and develop awareness of narrative points of view, tone, imagery, symbolism, and irony. Works studied include The Odyssey, The Old Testament, and Julius Caesar.

Grade 10: American Literature

The emphasis continues in critical writing and in practicing verbal and analytical skills. The focus is on American Literature. Students explore the myths and the conflicts of the American experience. Works studied include Huckleberry Finn, The Scarlet Letter, The Crucible, My Antonia, and selected poems of Whitman, Frost, and Dickinson.

Grade 11: British Literature

Although the course reviews usage, mechanics, sentence structure, and organization, the most significant progress takes place individually, as students revise and edit their own work through teacher's comments on papers or after individual conferences. The fall marking period is devoted to the study of poetry and Shakespeare, and culminates in the Junior English Paper, a major 3,000-word critical analysis of a single poem. The rest of the year traces the development of the English novel. Works studied include Wuthering Heights, Gulliver's Travels, and Great Expectations.

Grade 12: English VI

This course is the culmination of a student's progress in critical reading and in the development of a mature writing style. Students select a different course each semester. Recent offerings have included: Autobiography, Romantic Literature,

Comic Modes, Literature of the Islamic World, Literature of the American West, African-American Literature, Political Literature, and the Short Story. Advanced Placement credit is available within the structure of the electives. Additional writing and reading is assigned to those interested, upon approval of the department chair and instructors.

Creative Writing

This full-year course focuses on self-expression through creative writing. There are daily exercises in writing poetry and fiction, and as the course progresses the student develops longer projects such as play writing, movie scripts, writing for children, and a unit on comedy writing for television. This course is an elective and it does not fulfill the graduation requirement in English or Arts.

Foreign Language

The goal of the Foreign Language Department is to introduce students to the richness of other cultures through the medium of language. We live in an increasingly interdependent world, where students cannot succeed without the mastery of another language. Starting with the basics of vocabulary and grammar, we give students the building blocks to progress into an accomplished understanding of language and literature. We strive not only for competency but also for fluency and creativity in another tongue.

Grade 9 or 10

French, Spanish - Levels 1 and 2

In the first two levels, the foreign language sequences stress the acquisition of the four basic language skills: speaking, listening, reading, and writing. An eclectic

method is used, based upon a thorough grounding in grammar and practice in reading and translation, in guided and free composition and in aural-oral skills.

Latin - Levels 1 and 2

In this course students master fundamental Latin grammar, begin to read selected stories or short poems in Latin, learn to recognize the patterns of word derivation from Latin to English and the Romance languages, investigate ancient Roman life and culture, and explore many facets of Greek mythology.

Grade 10 or 11

French - Level 3

In Level 3, grammar is reviewed in advanced form, and proficiency in the use of language is sought through a multiplicity of drills, composition, and aural-oral techniques. The students in Regular and Honors levels are introduced to cultural and/or literary texts. Instruction in the target language is a continuing goal at this level.

Spanish - Level 3

In Level 3, grammar is reviewed in advanced form, and proficiency in the use of language is sought through a multiplicity of drills, composition, and aural-oral techniques. The students in Regular and Honors levels are introduced to short stories and plays. Level 3 courses are usually taught in the foreign language.

Latin - Level 3

Students finish the study of the finer points of grammar, continue learning about Roman life and culture and about Greek Mythology, and achieve greater vocabulary-building facility based on understanding how words are derived from Latin. They begin reading selections from various Roman writers on a wide range of

perennially vital topics including love, leadership, and heroism.

Grade 11 or 12

French - Level 4

Students in the French 4 elective continue to develop their language skills through reading, class discussion, and writing assignments. The instructor will try to tailor the content of the course to the interests of the students who have elected French 4. The offerings for 2005-2006 will include the survey of French history and civilization with excerpted literature from various historical periods, the 2004-2005 French 4 course, and a study of short fiction from the francophone world combined with a grammar-component preparation for the College Board SAT II in French. French 4 is open to students who have passed a Level 3 French course.

Spanish - 4 Honors, Level 4

The two courses share the same goal: to increase student proficiency in language skills. They require frequent class participation, readings in Spanish, writing, and the use of recorded material. Language usage is stressed, as well as a thorough review of grammar. In Spanish 4 Honors the reading selections are all based on literary work. Level 4 courses are taught in the foreign language.

French/Spanish - Level 4 AP Language

This course will concentrate on further developing the four communicative skills. Classes are conducted entirely in French or Spanish, and emphasize advanced work in grammar, progressive vocabulary building, reading literature and other authentic documents. Intensive writing and extensive speaking stress both formal and informal types of situations. This course will prepare

students for the May AP examination, a requirement for this course. May Departmental recommendation is required.

Latin - Level 4/5 AP

The AP Latin class will read Vergil's epic poem "The Aeneid", the entire work in English and selected passages in Latin, in preparation for the AP exam. Students who have completed Latin 3, and also students who have completed AP Ovid-Catullus, are eligible to take this course.

Grade 12

French - Level 5

Students who elect French 5 will continue to practice their language skills through reading and research, writing assignments, class discussions and student oral presentations. As in French 4, the specific course content will try to respond to the interests of the students in the course. The French 5 offerings for 2005-2006 will include a repeat of 2004-2005's Contemporary French Civilization course, and an Internet-based Current Events course. Courses in French cinema and a literature course are also in the development stage. French 5 is open to students who have successfully completed French 4 or the Advanced Placement Language course.

Spanish - Level 5

One of the department's most advanced reading/composition courses, it expects a high level of accomplishment from its students and requires them to confront material of substance and sophistication. Students aim at perfecting their reading, writing, and speaking skills, and review advanced grammar concepts. Level 5 courses are taught in the foreign language.

Spanish - Level 5 AP Literature

This course prepares interested students to take the AP Spanish Literature Exam. Classes, conducted entirely in Spanish, consist of discussion and analysis of major Hispanic literary works. The reading list covers a survey of literature in Spanish from the Middle Ages to the Twentieth Century. Departmental recommendation is required.

Latin - Level 5 AP

See above, Latin - Level 4/5 AP.

History

The Department of History and Social Science believes that the study of history is a cornerstone of a liberal arts education. History provides an appreciation of the past, its peoples and its cultures. The study of history offers unique opportunities to understand the human condition and the processes of change. These skills are necessary for the development of citizenship in a democratic republic. History allows for the development of a range of skills including reading, writing, memorization, and critical thinking. Research is an integral part of historical scholarship and requires familiarity with current technologies for investigation and communication.

Grade 9: Ancient World History

A survey course tracing the development of civilization from its prehistoric origins to the emergence of the modern world around 1500 AD. Emphasis is placed on an examination of the ancient civilizations of Egypt, Mesopotamia, India, China, and Greece. Skill

development and global awareness are emphasized.

Grade 10: Modern European

The course begins with the Renaissance and Reformation and continues to the present. Topics include the rise of nation-states, social and intellectual development, the great revolutions, World Wars I and II and changes in society and family life. Critical reading is expected and analytical writing is developed. Students learn to work with primary documents and refine research skills.

Grade 11 or 12: United States History

Students take a course with two major components. The first is a chronological coverage of American history from the Colonial period to the '80s. In the second component, students examine in depth critical themes of American history. Critical writing and analytical skills are emphasized. So, too, is historiography, the analysis of how historians have viewed controversial events, trends, or people in history. In May, a major 3,000-word research paper is required. Topics are introduced in March and the process of completing a major research paper becomes the focus of the fourth marking period.

History Electives:

Grade 12: Contemporary World Issues (Spring)

This course is designed for students to study current political issues and international crises from a historical point of view. The course examines global issues concerning terrorism, world political developments, and nuclear weapons. In all cases, emphasis is on historical background and students are urged to probe for solutions. The students are required to read current periodicals in

addition to the regular reading assignments.

Economics (full year)

This course introduces the students to the basic concepts of macro- and microeconomics and examines the operations of the market through case studies. Students write several papers and become acquainted with economic theories from Adam Smith to John Kenneth Galbraith. Discussion of public policy and government intervention in the economy is included. Students may do additional work in order to take the Advanced Placement exam in Economics in May.

AP United States Government and Politics (Fall)

This course begins with a general study of the American political system, taking a look at the constitutional and federal context of the national government as well as the cultural and ideological backdrop against which this system operates. In the belief that theory and practice cannot be separated, it shows how the system works using current politics.

Urban Studies (Fall)

What is a city? How did Buffalo evolve from a region of Native American villages to a booming metropolis at the end of the 19th century? How did the rise of large industrial companies, including the steel industry, contribute to the rise and fall of Buffalo in the 20th century? How can urban history, politics, sociology, anthropology and other social science disciplines help us understand cities? How have cities responded to immigration, poverty, fiscal crisis, race and gender inequality, technological change, population growth, transportation, and housing? What might alternative urban futures be like? What should they be like? Combining discussion with weekly

field trips into the city, these questions will be asked and answered in Urban Studies this semester.

Psychology (Fall)

The purpose of this course in Psychology is to introduce students to the study of the behavior and mental processes of humans. Students will be exposed to topics including, but not exclusive to, sensation and perception, states of consciousness, motivation and emotion, developmental psychology, social psychology and personality. This course is not designed to be a methods course in scientific psychology, but rather a theoretical introduction to the study of a variety of psychological topics.

Women's Studies/Gender Studies (Spring)

This course will explore the idea of gender as a category for analysis in history. Our concern will be to study women in the context of the historical developments of their time; reform movements, industrialization and urbanization, in light of their impact on women's experiences and values. The course will also consider a number of themes, including popular images of women, women and sexuality, women and work, women as consumers, and women as reformers. Our study will discuss how gender roles for men and women are described and prescribed and how they change over time. Documentary film will also be incorporated into this course not simply to elucidate the topic, but to raise questions about the representation of these issues in the media.

Human Geography (Spring)

This course is designed to be a college introductory geography class. It aims to introduce students to the basic concepts of Human

Geography and provide a geographic framework for the analysis of current local, regional and global problems. Using geographic tools and map skills, the course will examine issues pertaining to population distribution and composition, cultural patterns and processes, political organization, land use, industrialization and economic development and urbanization.

AP Art History (full year)

Students in this course will study the great masterpieces of painting, sculpture and architecture through slides, videos, discussions, and museum visits. The course has a wide breadth and will encompass art from prehistoric times through the twentieth century. Hopefully, this course will foster an appreciation of art and will enable students to discover the universal principles of aesthetics. At the end of the academic year students will be able to take the Advanced Placement examination in Art History. (Note: AP Art History does NOT satisfy the graduation requirement in Arts.)

Mathematics

The goals of the mathematics program at Nichols are for students to think conceptually, to reason analytically, and to utilize mathematics to solve everyday problems. For each course, the students are divided into three levels based on their backgrounds and ability. Courses at all levels make extensive use of graphing calculators and computers.

Algebra I

Students learn the skills of factoring, working with polynomials, graphing, and solving first and

second degree equations and inequalities.

Geometry

Students study the concepts of plane geometry, area, volume and proportion, and study the presentation of ideas in the format of formal and informal proof. The course also introduces students to trigonometry, which is explored in greater depth in the Advanced sections.

Algebra II

Algebra II reviews basic algebra skills and explores other topics in algebra including absolute value, linear and quadratic functions, systems of equations and inequalities, logarithmic and exponential functions. The notion of function and function notation is introduced. Modeling and interpreting data is also emphasized. The *Advanced* sections begin the study of analytic trigonometry.

Pre Calculus

This course extends the ideas studied in Algebra II and further explores topics in Analytic Trigonometry. Topics include polynomial, rational, trigonometric, exponential, and logarithmic functions; matrices, polar coordinates, parametric equations, vectors, sequences, series, probability, and analytic geometry. In the *Advanced* sections, differential calculus is studied in the fourth marking period.

Algebra III with Trigonometry

This course continues the study of intermediate algebra while introducing the study of Analytic Trigonometry.

Mathematics Electives:

AP Statistics

AP Statistics introduces students to the major concepts and tools for collecting, analyzing, and drawing

conclusions from data. Students are exposed to four broad conceptual themes: *i*) Exploring data: Observing patterns and departures from patterns

ii) Planning a Study: Deciding what and how to measure

iii) Anticipating patterns: Producing models using probability theory and simulation *iv*) Statistical Inference: Confirming models. The AP examination is a requirement of the course. Prerequisites: completion of *Precalculus* or *Advanced Algebra II*.

Functions and Differential Calculus

This course is designed for students who have successfully completed *Precalculus*. The first semester of the course will further explore the abstract notion of Function including Composition of Functions, Transformations of Functions, and interpreting applications of functions. Particular emphasis will be placed on Exponential, Logarithmic, and Trigonometric Functions. During the second semester, the course will explore the fundamentals of Differential Calculus including Limits, the Difference quotient, the Derivative and its applications. Prerequisites: completion of *Precalculus* and permission of the department

Differential and Integral Calculus

A full-year course is offered to qualified students. The areas covered include topics from differential calculus including slopes of secant and tangent lines, the definition and interpretation of the derivative, applications of the derivative including related rates, optimization and linearization. Topics from the integral calculus include techniques of integration and using integration to find area, distance, arc length and volume.

Prerequisites: completion of *Precalculus* and permission of the department.

AP Calculus AB

AP Calculus AB covers all the material presented in Calculus, however it is studied in greater depth and with more emphasis on theory as opposed to computation. Additional topics covered include Mean Value Theorem, volumes by known cross-section, slope fields and differential equations. The AP exam is a requirement of the course.

Prerequisites: completion of *Honors Precalculus* and permission of the department.

AP Calculus BC

AP Calculus BC covers all the topics in AP Calculus AB. Additionally, students in BC also study Rolle's Theorem, Taylor series, polar coordinates, hyperbolic functions, vectors, and parametric equations. The AP exam is a requirement of the course. Prerequisites: completion of *Advanced Precalculus* and permission of the department.

Applied Functions

Students use the TI-83 graphing calculator - which is incorporated into all aspects of this course. Graphing functions, data analysis, and developing mathematical models of real life phenomena are the major themes. Algebraic, exponential, logarithmic, and trigonometric functions are covered. Vectors, conic sections, polar coordinates, parametric equations, sequences, statistics, and probability will be covered as time permits.

examine natural laws, matter, ecology, energy, and the structure of the world around us; to acquire the tools of scientific inquiry; and to consider the relationship between science and society. The use of technology is an important part of the science curriculum. The department sections students by ability in biology, chemistry, and physics.

Grade 9: Physics

As the foundation of all other branches of science, it is our belief that a firm understanding of the natural laws that govern the universe is essential to further study in science. This is a conceptual course that allows students to understand the principles that govern the phenomena they witness in their everyday lives. The process of science is emphasized through laboratory work as each student will develop the tools to use technology for data collection and analysis.

Grade 10: Chemistry

Chemistry is a broad science. An understanding of chemistry is important in understanding other fields of science and touches on virtually every aspect of life. Chemistry is a course that explains basic chemical principles involving the study of matter: states of matter; chemical equilibrium; acids and bases; oxidation-reduction reactions; kinetics and thermodynamics; and organic biochemistry. This course prepares the student for advanced study in chemistry as well as laying the groundwork for an understanding of chemical principles that are especially applicable to the study of biology, the third course in the science sequence at Nichols. Physics is a prerequisite for Chemistry.

Grade 11: Biology

The main topics covered in Biology are: *i*) Molecular and Cellular

Science

Science at Nichols is designed to acquaint and encourage students to emulate the process of science; to

Biology, *ii*) Genetics, *iii*) Evolution, *iv*) Ecology, and *v*) Animal Structure and Function with an emphasis on Human Systems. Laboratory exercises are designed to demonstrate the principles discussed in class. Additionally, labs provide the students with an opportunity to develop laboratory skills and to learn the use/application of scientific instruments. Chemistry is a prerequisite for Biology.

AP Biology

This course follows the advanced placement biology curriculum. There are three major areas of study. In molecular and cellular biology, students study the chemical basis of biology, cell structure and function, enzymes, and energy transformations. In heredity and evolution, topics include basic heredity, molecular genetics and evolutionary biology. The organisms and populations unit includes species diversity, structure and function of plants and animals, and ecosystem structure and function. Laboratory work is an essential part of the course. The AP exam is a requirement of the course. Chemistry is a prerequisite. Permission of the department is required.

Grade 12: Physics II

This course is a review and continuation of the freshman physics course. It is the goal of this course to insure that students wishing to continue in the sciences, engineering or medicine have a complete and competitive background in physics that will provide them with the background necessary for their success at the college level. Laboratory work reinforces the topics discussed in the lecture. The emphasis will be on topics not covered in the freshman course. This course is open to students with a strong background in math.

AP Physics C

This course involves a rigorous mathematical approach to physics using a comprehensive college-level text. The content of the course follows the AP Physics C syllabus which is a calculus based engineering program consisting of one semester of mechanics and one semester of electricity and magnetism. The AP exam treats each semester separately. Students should feel well prepared for the mechanics exam and may elect to take the E&M exam as well although extra preparation would be required on their part. Concurrent registration in AP Calculus BC is required. The AP exam is a requirement of the course. In rare cases, the department chair may also admit students registered for AP Calculus AB.

AP Chemistry

This course is designed for students who have successfully completed one full year of chemistry and who have demonstrated excellent ability in the area of mathematics. It is the equivalent of a college freshman chemistry course. This course provides preparation for the advanced placement chemistry exam and for further scientific study at the college level. Laboratory work is a vital part of AP Chemistry. The AP exam is a requirement of the course. Permission of the department is required.

Anatomy and Physiology

Complete with clinical case studies and dissections, human anatomy and physiology examines both the structure and function of the human organ systems. The anatomy section of the course is interwoven with the physiology section so that the structure of body parts is related to the function of the body parts. Emphasizing relevance, each organ system is introduced with a clinical case study pertaining to a pathology

of the system. Through lecture and laboratory work, the course will explore the skeletal system, the muscular system, the nervous system, the circulatory system, the respiratory system, the digestive system and the renal system. Completion of the science graduation requirement is a prerequisite for this course.

Environmental Studies

This is an ecologically based course of study, although interdisciplinary topics from economics to ethics are considered. The course objective is to provide the students with a general understanding of how human activities affect the environment. Questions such as: Are we living sustainably? Should we, as a society, be moving towards renewable energy sources? What are the current state of our natural resources?, are considered from a variety of perspectives. Those students who struggle with these questions inevitably gain a heightened sense of awareness both of human nature and of the relationship between people and the environment. Lecture will be supported by laboratory work, student projects, and field studies. Completion of the science graduation requirement is a prerequisite for this course.

Geology

The study of the Earth's processes will offer students the opportunity to apply the principles of science learned in Physics, Chemistry, and Biology to our planet. The scientific principles of seismic waves will aid the student in determining the Earth's internal composition, while fossil studies will lead to conclusions about geologic time and past earth environments. Theories on plate tectonics, geomorphology, and geologic hazards are other topics of study. Lecture will be supported by laboratory work, student projects, and field studies. Completion of the

science graduation requirement is a prerequisite for this course.