

ILLINOIS MATHEMATICS AND SCIENCE ACADEMY
A Pioneering Educational Community

COURSE OFFERINGS 1998/99

MATHEMATICS

1112 (F) Geometry I/I

1113 (S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester Credit: .50
Prerequisite: Recommendation of Math Team

This is a one semester accelerated course in Euclidean Geometry for students with a solid background in Algebra. In addition to the content of a standard year long Geometry course, problem solving and proof are emphasized.

1121 (F) Mathematical Investigations I

1122 (S)

Grade Level: Sophomore/Junior
Length: One Semester
Credit: .50
Prerequisite: Recommendation of Math Team

Mathematical Investigations is a four-semester sequence of courses which integrates topics from all areas of pre-calculus mathematics. Throughout the sequence, students will be expected to explore mathematical concepts, make conjectures and present logical, valid arguments for mathematical assertions. Both written and oral forms of communication are emphasized. Prior to entry into the Mathematical Investigations sequence, the student must demonstrate a strong background in Algebra, including a thorough understanding of the underlying concepts, a demonstrated ability with algebraic skills, and schemata which encourages mathematical thinking.

1123 (F) Mathematical Investigations II

1124 (S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: .50
Prerequisite: Mathematical Investigations I or Recommendation of Math Team

The second course in this sequence, MI-2, will concentrate on the study of matrices, linear relationships, functions, and Arithmetic and Geometric sequences. Exponential functions are introduced.

1125 (F) Mathematical Investigations III

1126 (S)

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50

Prerequisite: Mathematical Investigations II or Recommendation of Math Team

MI-3 is the third semester of the Mathematical Investigations sequence. MI-3 builds on MI-2, extending the concept of function and applications to include polynomials, rational functions, and trigonometric functions.

1127 (F) Mathematical Investigations IV

1128 (S)

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50

Prerequisite: Mathematical Investigations III or Recommendation Math Team

MI-4 is the fourth semester of the Mathematical Investigations sequence. This semester will emphasize sequences and series, vectors, advanced trigonometry, conics, combinatorics, Binomial Theorem and mathematical induction.

1132 (F) AB Calculus I

1133 (S)

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50

Prerequisite: MI IV and the Recommendation of Instructor

AB Calculus is a two semester sequence which includes the concepts presented in the Advanced Placement AB Calculus syllabus. The first semester course discusses limits, derivatives and their applications, and an introduction to integration.

1134 (F) AB Calculus II

1135 (S)

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50

Prerequisite: AB Calculus I

The second semester of this sequence will include additional topics from the Advanced Placement AB Calculus syllabus with a concentration on the integral and its applications. Students completing AB Calculus I and AB Calculus II will have completed the equivalent of a semester of college level calculus.

1140 (F) BC Calculus I

1141 (S)

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50

Prerequisite: Mathematical Investigations IV and
Recommendation of Instructor

BC Calc is a three semester sequence which includes the material covered in the Advanced Placement BC Calculus syllabus. This course will cover the foundations of calculus including concepts and applications of rates of change, derivatives, antiderivatives, and limits. These will be seen from graphical, numerical, and analytic points of view.

1142 (F) BC Calculus II

1143 (S)

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50

Prerequisite: BC Calculus I

This second course will continue the study of derivatives and begin work on integrals. Technology will again be an important part of the development of the course.

1144 (F) BC Calculus III

1145 (S)

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50

Prerequisite: BC Calculus II

The third course of the sequence will conclude the material covered in the Advanced Placement BC Calculus syllabus. Topics will include sequences and series, differential equations, and polar graphs.

1150 Advanced Geometry

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisites: Mathematical Investigations IV or
Recommendation of the Instructor

This course is a study of advanced topics in geometry selected from such areas as: points of concurrence, cevians, the golden mean, fractals, matrix transformations, geometric averages, non-Euclidean geometry's, geometric probability, modeling, spirals, the theorems of Ceva, Menelaus, Pascal, Desargues, and Pappus. The course emphasizes mathematical connections through individual and group explorations, discussions and problem solving.

1151 Data Analysis

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: Mathematical Investigations III or Recommendation of Instructor

This is a very hands-on course in elementary statistics. Descriptive statistics and graphical displays for single and bi-variate data will be created and analyzed. Students will also analyze ways in which data is used and displayed in public documents. Several group and individual projects are required. Additional topics will be selected from probability, discrete and continuous distributions, regression analysis and correlation, design of experiments, and hypothesis testing.

1152(S) Differential Equations

Grade Level: Junior/Senior
Length: One Semester (Spring)
Credit: .50 Pass/Fail option
Prerequisite: BC II (or AB II with permission of instructor)

The theory of differential equations is interesting as a mathematical topic and has special relevance because it describes a surprising diversity of real world situations. In this course, we will investigate the behavior of solutions to linear and nonlinear differential equations. Special emphasis will be given to applications in the physical and biological sciences. Upon completion of this course, a student will be able to choose, troubleshoot, customize, or develop a variety of differential equation modeling schemes to suit his or her own particular needs.

1153 Exploring Math Topics Using *Mathematica*

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: Mathematical Investigations IV or Recommendation of the instructor. Familiarity with a Macintosh computer is advisable.

Students will use the computer environment made possible by the *Mathematica* software to explore mathematical topics from different perspectives. Prior experience is not required because the course will begin with basic training on the software. Some programming using *Mathematica* language will be included.}

1154 (F) Multi-Variable Calculus

1155 (S)

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: BC Calculus III and recommendation of the Instructor

Multi-Variable Calculus will apply the tools of calculus to functions of several variables. Topics will include the algebra and geometry of vectors, a study of functions of several variables, applications of partial derivatives, multiple integrals, line and surface integrals, and (time permitting) Green's, Stokes' and Gauss' Theorems.

1156 Number Theory

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: BC Calculus I (which in exceptional cases may be taken concurrently) and Permission of Instructor and Team Coordinator

Number Theory challenges students to question the number systems they have used all their lives. The integers are defined axiomatically, and familiar properties of arithmetic are proven. Exploration then turns to divisibility, primes, and the Fundamental Theorem of Arithmetic, the GCD, and linear diophantine equations. Linear congruence problems and multiple congruences (Chinese Remainder Theorem) are followed by special congruences (Theorems of Wilson and Euler-Fermat). This is then used to study decimal expansions of rational and real numbers. Further topics may include primality testing, continued fractions, introductory cryptography, and quadratic reciprocity. This course is centered around a dual emphasis on calculation techniques and rigorous proof.

1157 Problem Solving

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: Mathematical Investigations III or Recommendation of Instructor

In this course, students will learn how to apply a broad range of problem solving techniques and strategies while making inter and intra-disciplinary mathematical connections. The course will emphasize both individual and group investigations and explorations. **Students may not register for both Problem Solving and Advanced Problem Solving.**

1158 Advanced Problem Solving

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: BC Calculus I, or permission of Instructor **and** Team Coordinator, and a score of 95 or above on a previous AHSME exam.

The course will emphasize advanced techniques and strategies used at the national and international levels of problem solving, Mathematical Olympiads. Methods of proof and validation will be highlights in presenting formal mathematical solutions to unconventional, non-routine, essay-type problems. The course content will focus upon topics from advanced geometry, combinatorics, theory of equations, series, sequences, and number theory.

1159 Discrete Mathematics

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: Mathematical Investigations III or Recommendation of Instructor

The main emphasis of study will include topics of social applications, matrices, graph theory, recursion, techniques of counting, permutations, combinations, and probability. A major emphasis will be both individual and group investigations and explorations.

1160 Introduction to Algebraic Structures I

1161 Introduction to Algebraic Structures II

Grade Level: Junior/Senior

Length: One Semester (Spring)

Credit: .50 Pass/Fail option

Prerequisite: Multi-variable Calculus or Advanced Problem Solving or Number Theory **and** permission of the instructor.

Algebraic Structures I and II are advanced course offerings for students working at a level beyond Calculus. One of the two course options described below will be chosen by the mathematics department to be taught each spring. Students taking the course for the first time should sign up for enrollment in Algebraic Structures I (1160). Students who have already received credit for course number 1160 should sign up for enrollment in Algebraic Structures II (1161) after discussion with instructor or department coordinator.

OPTION 1 (Linear Algebra)

This course concentrates on the theory of simultaneous linear equations. Gaussian elimination is used as a tool to solve linear systems and to investigate the subspace structure of a matrix (kernel, range, etc.) Extensions of these ideas include orthogonality and least squares. Determinants are examined from several angles. Eigenvalues and eigenvectors are introduced, including a discussion of special matrices (symmetric, unitary, normal, etc.). The course also takes an abstract approach, looking at general linear transformations on finite dimensional vector spaces, culminating in the Jordan canonical form.

OPTION 2 (Abstract Algebra)

The content of this course is flexible, but is generally an introduction to abstract algebra. Students learn about groups, subgroups, homomorphisms, and the structure of various groups (such as the structure theorem for finitely generated Abelian groups, the Sylow theorems, etc.) Students also investigate the basics of rings. Ring topics include ideals and homomorphisms; PIDs, UFDs, and Euclidean domains; fields and (time permitting) field extensions including applications such as constructibility. All aspects of the course are presented with full mathematical rigor, and students are expected to produce proofs of equivalent quality to mathematics majors at a university.

1169 Introduction to Programming using C++

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail Option
Prerequisite: Mathematical Investigations III or
Recommendation of Instructor

This course is an introduction of programming and computer science using C++ language. Top down approach to algorithmic design and structural, object oriented programming will be emphasized.

1171(S) AP Computer Science

Grade Level: Junior/Senior
Length: One Semester (**Spring only**)
Credit: .50 Pass/Fail option
Prerequisite: Introduction to C++ or Recommendation of Instructor

This course will complete the AP Computer Science AB syllabus. Topics may include: pointer variables, recursion, stacks, queues, trees, linked lists, advanced programming techniques including advanced sorts and searches.

1172 (F) Computer Seminar

Grade Level: Junior/Senior

Length: One Semester (**Fall only**)

Credit: .50 Pass/Fail option

Prerequisite: Introduction to C++ or Recommendation of Instructor

This course will study advanced computer science topics including object oriented programming. Students will be expected to complete several group and individual projects, including a major program.

1173 Assembly Language Programming

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: Introduction to Pascal or Recommendation of Instructor

This course will introduce the students to the specifics of assembly language programming in the context of the 80x88 family of computers. Approximately half of the semester will be spent learning the language by writing programs which manipulate text and numeric data. The remainder of the semester will be spent writing application programs. Depending on student interest and background, those applications might include, but are not limited to, the following: a communications program between two computers, an interactive game using ASCII characters on the display, controlling an L.E.D. clock, controlling the traffic lights in an intersection, a disk utility program, and interfacing assembly language routines with high level programs.

SCIENCE

1200 Integrated Science I

Grade Level: Sophomore
Length: Two Semesters
Credit: 1.0 per semester
Prerequisite: None

This two semester interdisciplinary sequence takes its content from chemistry, physics, biology, earth science, and technology. Learning occurs in a context which emphasizes science process and applications to current and future problems. This is part of a three semester sequence which satisfies all but 1.0 credit of the Academy science requirement.

1201 Sophomore Chemistry

Grade Level: Sophomore
Length: Two Semesters
Credit: .50 per Semester
Prerequisite: None

This entry level core course is required for all first year students at the Academy except those students taking Integrated Science I. It introduces students to such scientific processes of observation, experimentation, communication, and information retrieval as related to chemistry. From these activities, concepts are developed and used in problem-solving. Course content includes atomic structure, gas laws, thermochemistry, periodicity, bonding, chemical reactions, and equilibria.

1202 Advanced Chemistry

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: Sophomore Chemistry or Integrated Science I

This course continues the study of inorganic chemistry that began Sophomore year. Topics such as electrochemistry structure, bonding, molecular geometry, and equilibrium are reviewed and expanded upon. In addition, several new concepts will be presented, including crystal structures, colligative properties of solutions, spontaneity, and reaction rates. Emphasis is on demonstration/discussion, problem-solving, as well as laboratory experiences. This course is strongly recommended for those students who plan on taking the AP Chemistry examination.

1203 Survey of Organic Chemistry

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: Sophomore Chemistry or Integrated Science I

This course introduces the student to the chemistry of carbon compounds that are essential to living things. Students learn how organic compounds are classified and named as well as typical reactions. An investigation into polymer chemistry is included. There will be a strong emphasis on laboratory work that will coordinate with concepts presented. This course is designed for the student who will only take one semester of organic chemistry.

1204 * Organic Chemistry I

Grade Level: Junior/Senior
Length: One Semester (**Fall only**)
Credit: .50 Pass/Fail option
Prerequisite: Sophomore Chemistry or Integrated Science I

1205 * Organic Chemistry II

Grade Level: Junior/Senior
Length: One Semester (**Spring only**)
Credit: .50 Pass/Fail option
Prerequisite: Organic Chemistry I

* These courses are designed as an introduction to the main functional groups of organic chemistry and their reactions. Emphasis is placed on understanding the theory behind organic reactions. Experiments are included to introduce laboratory techniques as well as demonstrate concepts. State-of-the-art instruments will be utilized in the laboratory.

1206 Biochemistry

Grade Level: Junior/Senior
Length: One Semester (**Spring only**)
Credit: .50 Pass/Fail option
Prerequisite: Organic Chemistry I or Survey of Organic Chemistry

This introductory course in biochemistry emphasizes several unifying concepts: three dimensional structure and biological activity; storage and transmission of information determining structure; generation and storage of energy; integration and regulation of biochemical processes and metabolic pathways. Many of the concepts developed in the course are connected to various disease states such as diabetes mellitus. Problem-based learning experience modules are utilized to place the student in the role of an active biochemistry investigator.

1207 Methods in Chemical Research

Grade Level: Senior
Length: One Semester
Credit: .50 Pass/Fail Option
Prerequisite: Sophomore Chemistry or Integrated Science I
Must be taking other Senior Perspectives Courses.

This course centers in the development of various methodologies in the history of modern chemistry, and predecessors in the history of natural philosophy. In the process of analyzing various methodologies, we will place them in an historical, philosophic and cultural context. Our project will not be limited to western models of science; methodologies from other cultures and civilizations. Our studies will include ethnobotany, pharmacognosy, alchemy and the history of the university and the history of academic disciplines.

1208 Facets of Thermodynamics

Grade Level: Junior/Senior
Length: One Semester (Spring)
Credit: .50 Pass/Fail option
Prerequisite: One semester of Calculus (either BC I or AB I)

Facets of Thermodynamics is an introduction to the analysis of several thermodynamic machines: heat engines, refrigerators, computers, cells, and the Universe. We build the principles from the probable behavior of large numbers of particles and play with the first order differential equations which describe their dynamics. We see what happens if the states of the particles are quantized. We take paths which lead to smooth and to chaotic dynamics. We look for the origin of time's arrow.

1221 Sophomore Physics

Grade Level: Sophomore
Length: Two Semesters
Credit: .50 per Semester
Prerequisite: None

This entry-level core course is required for all first year students at the Academy except those students taking Integrated Science I. It presents the foundational concepts of physics and the skills needed to investigate physical systems using a laboratory approach. It involves observation, data analysis, model building, and prediction. It emphasizes conceptual development to be used in problem-solving. Basic course content: mechanics, wave phenomena and light, kinetic theory, geometrical optics, electricity, and magnetism.

1222 Advanced Physics

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: Sophomore Physics or Integrated Science I

This course continues the study of basic physics concepts begun in Sophomore Physics. It reviews some previously covered topics and presents additional material on conservation laws, rotational mechanics, static's, wave phenomena, electricity, and magnetism. The emphasis throughout is on laboratory-based discovery, problem-solving techniques, and laboratory analysis. This course, in addition to Modern Physics, is recommended for students who intend to take the AP Physics B exam.

1223 (F) *Calculus-based Physics - Mechanics

Grade Level: Junior/Senior

Length: One Semester (**Fall only**)

Credit: .50 Pass/Fail option

Prerequisite: Sophomore Physics or Integrated Science I and AB Calculus I or BC Calculus I

1224 (S) *Calculus-based Physics - Electricity/Magnetism

Grade Level: Junior/Senior

Length: One Semester (**Spring only**)

Credit: .50 Pass/Fail option

Prerequisite: Sophomore Physics or Integrated Science I and AB Calculus I or BC Calculus I

* Calculus-based physics follows the typical sequence of a university physics course. The first semester is devoted to topics in mechanics, while the second semester develops the ideas of electricity and magnetism. The major emphasis of the course is on problem-solving and calculus is used throughout. These courses are strongly recommended for students who intend to take the AP Physics C exam.

1225 Astrophysics

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: Sophomore Physics or Integrated Science I

This course emphasizes scientific visualization. Using resources from the Internet, students examine current primary and secondary data sources. Techniques from classical mechanics, electromagnetism, nuclear, and atomic physics are utilized to examine the relationship between theoretical models and observational evidence. Project-based and problem-based learning experiences are the instructional emphases. Possible topics include astronomical instrumentation, stellar characteristics, the interstellar medium, and the various models of stellar formation and evolution.

1228 Electronics

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: Sophomore Physics or Integrated Science I

This is an introductory course in electronics designed for students with interest in "hands on" experience with basic electronics. Students are encouraged to discover basic electrical concepts through laboratory experiences, derive various formulas and conclusions describing their observations, and test their theories with appropriate experimentation in the lab. Projects, incorporating the knowledge gained through guided discovery, provide a culminating experience for the students. Students are encouraged to choose projects which interest them and provide them with the appropriate level of challenge based on their current level of understanding. Course Topics include: Ohm's Law, Series/Parallel Circuits, Superposition Theorem, Capacitors - AC & DC Analysis, Inductors, Diodes, Transistors, Op Amps and Basic Digital Circuits.

1229 Modern Physics

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: Sophomore Physics or Integrated Science I

This course includes topics in physics beyond the scope of Sophomore Physics which relate to phenomena and devices of importance to modern physicists. These include: quantum and atomic physics, special relativity, cosmology, particle physics, nuclear physics, symmetry. This course is recommended for students who intend to take AP Physics B exam.

1230 Geophysics

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: Sophomore Physics and Sophomore Chemistry, or Integrated Science I

This course will challenge students to develop models of how the earth functions. Using concepts from physics, chemistry, and biology, relationships and connections between the lithosphere, hydrosphere, biosphere, and atmosphere will be explored. The causes and effects of Global Warming, earthquakes, hurricanes, and other phenomena will be explored using actual up-to-the-minute data from the Internet and computer models. Satellite images, computer-aided learning materials, and problem-based methods are used.

1240 Integrated Science II

Grade Level: Junior

Length: One Semester

Credit: 1.0

Prerequisite: Integrated Science I

The presentation is interdisciplinary throughout taking its content from chemistry, physics, biology, earth science, and technology. Learning occurs in a context which emphasizes science process and applications to current and future problems. This is part of a three semester sequence which satisfies all but 1.0 credit of the Academy science requirement.

1241 University Biology

Grade Level: Junior

Length: Two Semesters

Credit: .50 per Semester

Prerequisite: Sophomore Chemistry and Sophomore Physics

This core course is required for all Junior students at the Academy except those students taking Integrated Science II. It is a survey course for students with a background in chemistry and physics. Topics include molecular biology, cell biology, ecology, and the evolution and diversity of life. Extensive laboratory experiences are provided and concepts are developed by the inquiry method.

1242 Ecology

Grade Level: Senior
Length: One Semester (**Fall only**)
Credit: .50 Pass/Fail option
Prerequisite: University Biology or Integrated Science II

Interrelationships among organisms, and their environments, and the diversity of the Earth's ecosystems, communities, and populations are covered in the course. The course considers both theoretical and applied aspects of ecology including current environmental issues. The course spends most lab days off campus examining field problems with several optional activities offered to supplement the regular course material.

1243 Human Anatomy and Physiology

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: University Biology or Integrated Science II

This course covers the structure and function of the human body. Emphasis is placed on the cardiovascular, respiratory, nervous, and endocrine systems. Laboratory work utilizes the open-ended investigative format. Computers are used for data acquisition and analysis. Ethical issues activities covering various aspects of human biology are included in discussion sections. A class project and oral presentations are integral parts of the course.

1244 General Microbiology

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: First Semester of University Biology or Integrated Science II

This course examines microbial diversity, emphasizing the interrelationships of bacteria with their environments. This includes aspects of cell structure, metabolism, growth, genetic structure/change in microorganisms, virology and microbial diversity. Laboratory exercises will include microscopy, staining techniques, pure culture techniques, control of microbial growth, quantitative techniques, and physiological testing. A series of unknown cultures will be presented to the student to test their mastery of the above techniques.

1245 Pathogenic Microbiology

Grade Level: Senior
Length: One Semester (**Spring only**)
Credit: .50 Pass/Fail option
Prerequisite: General Microbiology

Survey of the bacteria, protozoa, viruses, and fungi associated with infectious disease, including study of morphology, physiology, immunology, of these host/parasite interactions. Students will learn about various disease-causing microbes via the case-study method. A library research paper dealing with some disease-causing microbe will be required.

1246 Genetics

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: First Semester of University Biology or Integrated Science II

Coverage of traditional and modern aspects, including developmental genetics, Mendelian genetics, sex linkage, mutation, population genetics, statistical applications, and ethical dilemmas posed by recent technological advances. Varied activities, including labs, field trips, discussions, and lectures are used in the course format.

1248 Patterns of Biological Diversity

Grade Level: Junior/Senior
Length: One Semester (**Spring only**)
Credit: .50 Pass/Fail option
Prerequisite: None

This course explores the diversity of living organisms, their structure and organization, and their patterns across space and time. Emphasis is given to plant and animal groups that students are able to observe in the field. Topics include animal behavior, animal and plant taxonomy, animal and plant phylogeny, biogeography, biological and environmental conservation, and an exploration into the natural history of many local plants and animals. An appreciable amount of time is dedicated to field work.

1250 Plants and People

Grade Level: Junior/ Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: None

Plants and People is a laboratory botany course that explores plants and fungi and their impact upon people. Areas of emphasis include: food plants, poisonous plants, hallucinogenic plants, medicinal plants, fossil plants, history-making plants, ecologically disruptive plants, and plants of religious significance. Students will also investigate the species concept in plants, plant extinction, its consequences, and the use of plants by humans in the future. Field trips are an integral part of the course.

1251 Biotechnology

Grade Level: Junior/Senior
Length: One Semester
Credit: 1.00 Pass/Fail option
Prerequisite: University Biology or Integrated Science II

Students in this course will conduct laboratory work with the tools and techniques of modern molecular biology as well as come to understand the utility of biotechnology. Readings, discussions, presentations, and research papers will help the student place the science into the context of the society that developed it, focusing on topics ranging from the ethical employment of biotechnology to fictional and historical explorations of science and technology.

This course will count as two academic courses towards the minimum five academic classes required each semester.

1261 The Big Bang to Now

Grade Level: Junior/Senior
Length: One Semester
Credit: 0.50 Pass/Fail option
Prerequisite: None

Cosmogony-cosmology, formation of the solar system, meteorology, climatology, oceanography, geology (especially historical), resulting physical geography--and how all of the above affect history, economic patterns, ethnography, and physical anthropology.

1278(F) Junior Project in Science

1279(S)

Grade Level: Junior

Length: One - Two Semester(s)

Credit: .50 - 2.00 Pass/Fail option

Prerequisite: Science Team and Principal's Office
approval

Independent projects or research which enable juniors to investigate an approved science topic of their choice under the sponsorship of a faculty advisor. The project must be designed and appropriate approval granted before the beginning of the project term. The process of this project is as important as the product. The outcome of some of the activities may result in competition with peers or publication.

1440 Science, Society and the Future

Grade Level: Senior

Length: One Semester

Credit: 1.00 (.50 Social Science & .50 Science)

Pass/Fail option

If taking this course both semesters, please be advised that of the 2.00 credit granted, only .50 can be applied toward fulfilling the science graduation requirement.

Prerequisite: World Studies and University Biology or Integrated Science II

Exploration of issues which result from the interaction of science and society is the focus of this course. The investigations will be lead by a team of instructors from science and social science. The roots, controversies and ethical implications of each issue will be examined in a "think tank" environment with special attention given to analysis of the behavior of complex systems using basic science knowledge and mathematical modeling. Attention is also given to the potential impact each solution might have on society. **This course will count as two academic courses towards the minimum five academic classes required each semester.**

ENGLISH

1310

Sophomore English

Grade Level: Sophomore
Length: Two Semesters
Credit: .50 per semester
Prerequisite: None

This course introduces students to a variety of genres in literature, to the processes of effective aesthetic reading, to the work of discussion and performance as a response to literature, and to the processes of writing in a variety of forms and for a variety of purposes. Sophomores may read *OEDIPUS REX*, *THE ODYSSEY* (in a poetry translation), *ADVENTURES OF HUCKLEBERRY FINN* and a Shakespeare play. Additional readings for this year-long core course will be selected by individual instructors from a variety of authors and from many cultural traditions.

1320

Junior English

Grade Level: Junior
Length: Two Semesters
Credit: .50 per semester
Prerequisite: Sophomore English

The work of developing skill in aesthetic reading and in discussion, performance, and writing continues at higher levels. Students are expected to develop greater independence as readers and writers and to be more conscious of their own processes as readers and writers. All juniors will read selections from *The Bible*; a Shakespeare play; Dostoevsky's *Crime and Punishment*; Kafka's "The Metamorphosis"; and Voltaire's *Candide*. Additional works for this year-long core course will be selected by individual teachers.

Senior English (Required)

Students must be enrolled in an English class each semester of their senior year.

YEAR-LONG SENIOR ENGLISH OFFERINGS

1370 Topics in American Literature: Modern Poetry of North and South America

Grade Level: Senior

Length: Year-Long

Credit: 1.0

Prerequisite: Junior English (if adding second semester, successful completion of 1350)

"Anyone who wishes to live fully, needs and seeks poetry." This course enables students to develop their analytical skills and aesthetic sensibilities by examining how a poem means and what meaning poetry has within and beyond the literary world. To begin, students will explore and practice how poetry is made; then they will examine the primary and varied voices that emerged from and shaped the Modern experience and its literature (1890-1920, North American).

Students then will consider what it means to be modern and American, by studying the voices of Spanish American poetry. Continuing their own practice of crafting poetry--through imitation, recitation, and original work students will consider further how the power of language, intensified as it is in poetry, influences and transforms individual and societal identity. "Poetry is the other voice," says Octavio Paz. "If human beings forget poetry, they will forget themselves."

This is a discussion-based course involving performance and extensive writing, both of poetry and prose.

FIRST SEMESTER SENIOR ENGLISH OFFERINGS

1330 Topics in American Literature: Modern American Poetry
Grade Level: Senior
Length: One Semester (Offered also in Second Semester as course #1350)
Credit: .50
Prerequisite: Junior English

This course explores modern poetry (definition and expression): its mathematical clarity and symmetry; its intellectual freedom; its contextual voice, both dissonant and harmonious; its fundamental nature. We begin with Walt Whitman and end with Adrienne Rich, seeking our connection to the collective while always listening to our own voices. Major readings include Donald Hall, Denise Levertov, Wallace Stevens, A. R. Ammons, Elizabeth Bishop, T. S. Eliot.

1331 The Short Story: Theory and Practice
Grade Level: Senior
Length: One Semester (Offered also in Second Semester as course #1351) both semesters)
Credit: .50
Prerequisite: Junior English

This course leads students to develop their own theory of the short story by exercising their critical and creative thinking skills in a workshop setting. Students read and discuss short stories by modern authors demonstrating a wide range of approaches to the art of storytelling; each student composes her or his own short story and reads it to the class for critical response. (A caution to students primarily interested in fantasy and/or science fiction: the theoretical and practical focus of the course is literary realism.)

1332 The Idea of the Individual
Grade Level: Senior
Length: One Semester (Offered also in Second Semester as course #1352) semesters)
Credit: .5
Prerequisite: Junior English

This is a class in life-writing that raises the question of whether or not the personal self is an adequate narrating principle for existence. The course addresses the gradual splintering of the notion that the self and the soul are synonymous, as well as the accompanying idea that the self and its personal narrative are synonymous with history. Primary readings will include Faulkner's The Sound and the Fury; Rousseau's Confessions; Defoe's Moll Flanders; E.L. Doctorow's The Book of Daniel; Sartre's Nausea; Melville's Pierre; and DeQuincey's Confessions of an English Opium Eater. We will also consider the nature of identity amid the culture of the image, and will view a variety of films ranging from works by Leni Riefenstahl to Dali's Andalusian Dog and David Lynch's Eraserhead.

1333 The Russian Consciousness in Literature

Grade Level: Senior
 Length: One Semester (**Offered first semester only**)
 Credit: .50
 Prerequisite: Junior English

What qualities, what perceptions in the Russian consciousness might account for Russia's rapid and significant change from an apparent backwater of Europe to a major world power in the twentieth century? To explore these and other questions, students will study a variety of pre- and post-Revolutionary Russian writers whose works express and give insight into the Russian consciousness.

1338 Belief in Question in Modern Literature

Grade Level: Senior
 Length: One Semester (**Offered first semester only**)
 Credit: .50
 Prerequisites: Junior English

In this course we will raise the human experience of belief as a complex of attitudes that has stimulated the literary imagination. Works by Jorge Luis Borges, Graham Greene, Bernice Rubens, John Updike, William James, and Sigmund Freud, among others, will allow us to look at belief as a phenomenon that has served to radicalize thought as well as enslave it. We will see that while belief is commonly conceived and often expressed in religious terms, it is also a human stance secured by non sacral tethers.

1339 Portraits of Creativity

Grade Level: Senior
 Length: One Semester (**Offered also in Second Semester as course #1359** both semesters)
 Credit: .5
 Prerequisite: Junior English

We will examine the lives and work of creative people in several of the arts (including literature, music, and painting) and the sciences, posing questions concerning the nature of artistic and scientific work, the roles of the artist and scientist in our culture, and the relationship between Apollonian order and Dionysian spontaneity in creative work. Through discovery, students will consider issues of creativity in their own lives.

1343

Science, Revolution, Ideology and the Arts: English I

(Telling Lives: The Individual, Nature, and the Living World)

Grade Level: Senior

Length: One Semester (**Fall only**)

Credit: .5

Prerequisite: Perspectives Junior English, or Junior English

Other requirements: Must be scheduled with "SRIA: History I," except in special cases with instructor permission

This course examines the interconnections among views of the natural world and the cosmos, and the ways that humans conceive of individual identity. We will spend the semester reading about the constitution of the natural world as an Other, which, depending on cultural contexts, must be suppressed, fought, or embraced. Though we will read a variety of examples of life-writing, poetry, philosophy, and novels from antiquity to the present, we will focus on the development of the idea of the individual in the modern world during the Age of Reform, from 1250-1550, and chronicle its evolution and eventual exhaustion in a postmodern world. We will consider conceptions of the body, gender, and the natural world as they are manifested in a variety of literary genres and in historiography. Our readings will include writings by Ficino on the nature of astral daemons and love; selections from Sir Isaac Newton's works on optics, the Book of Daniel and alchemy; works by English Puritans like the poets Milton and Marvell; readings from Renaissance medical treatises, and autobiographies by Americans including slaves, founding fathers, founding mothers, Thoreau, Emerson, and John Quincy Adams. We will close the semester with works that respond to Darwin's theories on the evolution and nature of man. Our final readings will thus include Stoker's Dracula, Huysmans' Against Nature, and E.L. Doctorow's The Book of Daniel.

SECOND SEMESTER SENIOR ENGLISH OFFERINGS

- 1350 Topics in American Literature: Modern American Poetry
Grade Level: Senior
Length: One Semester (Offered also in First Semester as course # 1330)
Credit: .50
Prerequisite: Junior English

This course explores modern poetry (definition and expression): its mathematical clarity and symmetry; its intellectual freedom; its contextual voice, both dissonant and harmonious; its fundamental nature. We begin with Walt Whitman and end with Adrienne Rich, seeking our connection to the collective while always listening to our own voices. Major readings include Donald Hall, Denise Levertov, Wallace Stevens, A. R. Ammons, Elizabeth Bishop, T. S. Eliot.

- 1351 The Short Story: Theory and Practice
Grade Level: Senior
Length: One Semester (Offered also in First Semester as course # 1331)
Credit: .50
Prerequisite: Junior English

This course leads students to develop their own theory of the short story by exercising their critical and creative thinking skills in a workshop setting. Students read and discuss short stories by modern authors demonstrating a wide range of approaches to the art of storytelling; each student composes her or his own short story and reads it to the class for critical response. (A caution to students primarily interested in fantasy and or science fiction: the theoretical and practical focus of the course is literary realism.)

- 1352 The Idea of the Individual
Grade Level: Senior
Length: One Semester (Offered also in First Semester as course # 1332)
Credit: .5
Prerequisite: Junior English

This is a class in life-writing that raises the question of whether or not the personal self is an adequate narrating principle for existence. The course addresses the gradual splintering of the notion that the self and the soul are synonymous, as well as the accompanying idea that the self and its personal narrative are synonymous with history. Primary readings will include Faulkner's The Sound and the Fury; Rousseau's Confessions; Defoe's Moll Flanders; E.L. Doctorow's The Book of Daniel; Sartre's Nausea; Melville's Pierre; and DeQuincey's Confessions of an English Opium Eater. We will also consider the nature of identity amid the culture of the image, and will view a variety of films ranging from works by Leni Riefenstahl to Dali's Andalusian Dog and David Lynch's Eraserhead.

1359 Portraits of Creativity

Grade Level: Senior

Length: One Semester (Offered also in First Semester as course # 1339)

Credit: .5

Prerequisite: Junior English

We will examine the lives and work of creative people in several of the arts (including literature, music, and painting) and the sciences, posing questions concerning the nature of artistic and scientific work, the roles of the artist and scientist in our culture, and the relationship between Apollonian order and Dionysian spontaneity in creative work. Through discovery, students will consider issues of creativity in their own lives.

1364 Modern Irish Literature

Grade Level: Senior

Length: One Semester (Offered second semester only)

Credit: .50

Prerequisite: Junior English

Irish artists sing songs of rage and rapture that are a forming force in twentieth-century literature. In listening to them we will engage with an often comic cultural vision that is oddly energized by a fear of sex and a love of death. The course will explore the fiction and poetry of seminal authors James Joyce and W.B. Yeats, and the drama of Synge and O'Casey. In addition, we will read, discuss, and write about some of their descendants in contemporary Irish literature: fiction writers William Trevor, Edna O'Brien; poets Thomas Kinsella, Seamus Heaney, Eavan Boland, Michael Longley; dramatists Brian Friel, Samuel Beckett. We will also examine the recent flowering of Irish film (e.g., "In The Name of the Father", "The Crying Game") and Irish rock music (e.g., "U2", "Black 47").

1369

Science, Revolution, Ideology and the Arts: English II
(Telling Lives: The Individual and the Cosmos: Modernity)

Grade Level: Senior

Length: One Semester (**Offered second semester only**)

Credit: .50

Prerequisite: Perspectives Junior English, or Junior English

Other requirements: Must be scheduled with "SRIA: History II," except in special cases with instructor permission

This course examines the relationships between changing descriptions of the physical universe and the structure of narrative in historiography, the novel, and poetry. It examines the simultaneous emergence of theories of the human unconscious in the late nineteenth century, and the resulting alterations in definitions of human identity. We will examine the stream-of-consciousness novel (Woolf, Joyce), and the twentieth-century long poem (Eliot, Crane, Lowell). We will also look at Japanese Modernist novels by Dazai and others, and consider the phenomenon of magical realism in Garcia Marquez' One Hundred Years of Solitude and Carpentier's The Lost Steps. Our readings in psychology will take us from William James and Freud to Lacan. Readings in historiography will include Paul Veyne's meditations on history; Sartre's novel Nausea, and Simon Schama's Dead Certainties. Ancillary to our literary encounters will be readings that give a voice to movements in the arts: the writings of Tristan Tzara, Hans Arp, and others. Our readings will conclude with Tom Stoppard's play Travesties. Films--Kafka, The Way Things Happen, and Nosferatu, The Andalusian Dog, Blue Velvet will round out our consideration of the shapes of modernity.

HISTORY AND SOCIAL SCIENCE

1410 American Studies

Grade Level: Sophomore
Length: Two Semesters
Credit: .50 per Semester
Prerequisite: None

Through investigations of primary and secondary sources, cinematic and still images, and selected works of literature, the American Studies program seeks to assist the student in developing an historical consciousness, or an understanding of the continuum and complexity of the human experience, that is really the foundation for serious integrative, ethical and critical thinking and thus lies at the heart of the IMSA experiment and mission. A multitude of research and presentation skills are developed through investigative projects centered in a conceptually consistent vision of the American Experience. Participation in the Sophomore Perspectives Project will fulfill this requirement.

1421 Topics in World Studies

Grade Level: Junior
Length: Two Semesters
Credit: .50 per Semester
Prerequisite: American Studies

The world's history and the major issues confronting its people have assumed an increasingly global character. An understanding of the roots and nature of our global era is developed studying topics using a humanities approach which focuses on the ideas, events, trends, ideologies, and the creative expressions found in diverse cultures. Students continue to expand their historical consciousness in a more global context. Integrative, ethical and critical thinking abilities are refined through the application of research and presentation skills that are applied to investigative projects centered in a conceptually consistent vision of the human past. Participation in the Junior Perspectives Project will also fulfill this requirement.

1431 International Relations

Grade Level: Senior
Length: One Semester (**Offered Spring semester only**)
Credit: .50 Pass/Fail option
Prerequisite: World Studies

Nation-states play a sometimes deadly but nonetheless "Great Game" to use Kipling's expression. In the context of history and the present, the course will explore the spirit and players of this game, as well as the game itself. Students will be given opportunities to do better than heads of state in bringing resolution to some of the world's problems. The course concludes with a brief look at truly global issues that no one state can address alone.

1432 Psychology

Grade Level: Senior

Length: One Semester (**Offered Fall semester only**)

Credit: .50 Pass/Fail option

Prerequisite: World Studies

Psychology is the scientific study of behavior and mental processes. It organizes and investigates information regarding the inherently fascinating subjects of ourselves and the people around us. This course will survey such topics as the biology of behavior, personality, learning, memory, development, the history of psychology, and sensation and perception. The overall goals of Psychology include the development of an awareness of the complexity of human behavior and an increase in the understanding of self and others. Along with content knowledge and hands-on activities, students will consider social issues related to the use and abuse of the science of psychology. Additionally, students will further develop their skills of problem solving, writing, listening, reading, oral communication and thinking.

1433 Topics in Psychology

Grade Level: Senior

Length: One Semester (**Offered Spring semester only**)

Credit: .50 Pass/Fail option

Prerequisite: World Studies

The curriculum of Topics in Psychology is shaped by student interest and input from the instructor using a discussion and voting process. The focus is on those topics which are the most pressing and interesting social concerns of the day. General area of study are based on recommendations by the American Psychological Association. Students will be asked to engage in problem solving activities, taking a stand on issues related to areas such as mental health care, data collections and simulations. topics selected by students in the past include abnormal behavior, alternative states of consciousness, social psychology with a focus on social control, gender issues, racism, and human motivation and emotions. There is an independent study component in the course which allows students to focus on an area of psychology in which they are personally interested. The course will not duplicate the broader experience of the survey course but may be taken in addition or as an alternative to Psychology.

1434 Macroeconomics

Grade Level: Senior
Length: One Semester (**Offered Fall semester only**)
Credit: .50 Pass/Fail option
Prerequisite: World Studies

Macroeconomics is an issues oriented course in which basic macroeconomics concepts and theories (scarcity, supply and demand, inflation, unemployment, fiscal and monetary policy) are presented through the exploration and analysis of specific political and social realities. The issues themselves are ordered so as to facilitate a logical and systematic development of macroeconomics principles, concepts and theories. An exploration of economic thought provides the background for debates, discussions, simulations, and research which will be the tools for analysis. Students will also have an opportunity to participate in a mock international currency and interest rate vehicle trading exercise which should give their newly acquired knowledge of macroeconomics concepts a certain immediacy.

1435 Microeconomics

Grade Level: Senior
Length: One Semester (**Offered Spring semester only**)
Credit: .50 Pass/Fail option
Prerequisite: World Studies

Microeconomics is an issues oriented course in which basic microeconomics concepts and theories (demand and consumer choice, the firm, monopoly, oligopoly, capital, interest, profits, labor unions and collective bargaining) are presented through the exploration and analysis of specific political and social realities. The issues themselves are ordered so as to facilitate a logical and systematic development of microeconomics principles, concepts, and theories. An exploration into the historical development of the modern corporation and capitalism provides the background for debates, discussions, simulations and research which will be the tools for analysis.

Students will have an opportunity to guide the fortunes of a fictitious multinational conglomerate through the hazards of a simulated international business environment which should give their newly acquired knowledge of microeconomics concepts a certain immediacy.

1436

Topics in Recent United States History

Grade Level: Senior

Length: One Semester (**Offered Spring semester only**)

Credit: .50 Pass/Fail option

Prerequisite: World Studies

This course will focus on the years 1945 to the present. Recent U.S. History will present many of the topics, themes, issues, personalities, and events which are often not covered because time runs out in regular History courses. Therefore, this course will permit greater flexibility within the IMSA American Studies curriculum. The teacher and students will select units from among various themes and topics, a few of which include: The Cold War, Diversity: Counter-culture movements, Justice and Equality: Civil Rights and Civil Liberties in Post-War America, Power: Who Runs America?, The Seventies and the Issues of Scarcity and Limitations, The Significance of the Vietnam War in American History, American Post-War Popular Culture, Literature, and Movies, Evaluating the Reagan-Bush 80's: The Good or Bad Decade and many other possible options. The themes and topics will be presented, in many instances, from an inter-disciplinary perspective incorporating Science, Literature, Political Science, International Relations, Sociology, Economics, and Art and Music.

1437

European History

Grade Level: Senior

Length: One Semester (**Offered Fall semester only**)

Credit: .50 Pass/Fail option

Prerequisites: World Studies

Our contemporary world was forged in the heat of Europe's twentieth century wars. By 1900, Europe stood astride the globe, and from this apex she slid into a fiery maelstrom of extremism, greed, and horror sucking the rest of the world with her. Fed by the blood of tens of millions, the fires of two great wars and the hammers of dictatorship destroyed Europe and changed the world. Phoenix like she rose from the ashes but now, yielding much to others, reclaimed only part of her former position of power and glory in a very different world. In this world, from East Jerusalem to England's once again green and pleasant hills, the "White Man's Burden" has made boom boxes everyman's bitter-sweet joy.

The course will explore several dimensions of the birth, and development of the modern in Europe, and its purported death at the hands of a global and non-national, nomadic power elite. Both the history and the historiography of these phenomena will be addressed. Moreover, the investigation of this specific subject matter will lead into an exploration of the nature of the historical process and will facilitate students in their acquisition of a historical consciousness, a prerequisite for leadership in any field.

1438

Politics and Society

Grade Level: Senior

Length: One Semester (**Offered Fall semester only**)

Credit: .50 Pass/Fail option

Prerequisites: World Studies

Politics and Society will examine the relationship between the American political process and a number of major ideological, social, economic, and governmental issues which confront American society today.

In this non-election year, we will examine the ideology and policy proposals of the new Republican Conservative Congressional majority, note how the Clinton Presidency and Democratic Liberalism react to their historic 1994 midterm election defeat, and observe how national policy and legislation takes place between a deeply divided federal government. We will also review several key areas of Political Science such as political ideology, civil liberties, civil rights, and the making of public policy. We will look at how the various political ideologies organize their vision of American society around the concepts of Liberty, Equality, and Community. Finally, a number of contemporary political, policy, and social issues will be presented and debated such as Political Correctness, the Feminist political agenda, the Republican Contract with America, the proposed Prayer in the Public Schools Amendment, National Health Care, "Does the Bill of Rights Coddle Criminals?" Affirmative Action/Quotas, Censorship, and "What Are Traditional Family values?"

1440

Science, Society and the Future

Grade Level: Senior

Length: One Semester (**Offered both semesters**)

Credit: 1.00 (**.50 Social Science and .50 Science**)

Pass/Fail option

If taking this course both semesters, please be advised that of the 2.00 credit granted, only .50 can be applied toward fulfilling science graduation requirement.

Prerequisite: World Studies and University Biology or Integrated Science II

Exploration of issues which result from the interaction of science and society is the focus of this course. The investigations will be lead by a team of instructors from science and social science. The roots, controversies and ethical implications of each issue will be examined in a "think tank" environment with special attention given to analysis of the behavior of complex systems using basic science knowledge and mathematical modeling. Attention is also given to the potential impact each solution might have on society. **This course will count as two academic courses towards the minimum five academic classes required each semester.**

1443 Science, Revolution, Ideology, and the Arts: History I
(Genesis Rewritten: A History of the Life Sciences)

Grade Level: Senior
Length: One Semester (**Offered Fall semester only**)
Credit: .50 pass/fail option
Prerequisite: World Studies

This course will trace the attempts to understand and explain the living world over the two thousand years from ancient Greece to twentieth century America. We will examine the numerous religious, philosophical and scientific attempts to account for the origins, structure, function and interrelationships of living things. We will study the effect of the notion of divine creation on the way that life is understood in the western tradition, and we will pay special attention to the influence of Darwinian ideas of random variation and natural selection on the way we view the living world (and ourselves). We will explore the human drive to order the living world, and we will consider the relationship between systems of political order and systems of natural order and classification. Finally, we will consider the changing attitudes of humanity towards nature, wilderness and the environment, from the ancient notion of nature as dark and chaotic to the development of the American National Park system and the growth of modern notions of ecology.

The course is required for students in the first semester Senior Perspectives Program; other students may take it as an elective.

1444 Science, Revolution, Ideology and the Arts: History II
(Cosmos and Culture: A History of Astronomy, Cosmology, and Physics)

Grade Level: Senior
Length: One Semester (**Offered Spring semester only**)
Credit: .50 pass/fail option
Prerequisite: World History

Astronomy serves as the perfect vehicle for the examination of the history of science and its relationship with culture as a whole. Humanity has sought to explain the phenomena of the heavens for thousands of years, and those explanations have taken a variety of forms: mythological, philosophical, scientific. In addition, many of the revolutions in thought that have transformed humanity's views of physical nature have centered on astronomical and cosmological questions. This course will concentrate on four major themes: the development of astronomical thought; the interactions between astronomy, physics, and mathematics, the relationship of astronomy and physics to religion, philosophy, and art; and the links between dominant models of the universe and dominant models of political authority. We will trace these themes through six major units, beginning in Greek antiquity and ending in the twentieth century universe of Einstein's General Theory.

FOREIGN LANGUAGE

1511 French I

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: None

Special Note: **This course is not open to students with prior experience in French.**

Students are expected to read, write and speak about their immediate world, which would include their interests, school life, family, friends and self. They will be able to ask for and understand basic information in order to survive in the language.

1512 French II

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: French I and Teacher Recommendation/**or** Proficiency Exam and Teacher Recommendation

Students will build on the survival skills attained in French I, while moving toward developing greater fluency in speaking and writing. The concept of the student and her or his "immediate world" will be expanded to the larger concept of "I and my extended world." Spoken and written language will progress from short sentence level to a more cohesive paragraph level. In a similar fashion, reading and listening comprehension will also be developed. The course will include units on Francophone poetry.

1513 French III

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: French II and Teacher Recommendation/**or** Proficiency Exam and Teacher Recommendation

Students will be expected to be able to read, speak, and write about various topics such as the education system, professions, family, women in society, and current events. They will be able to analyze French poetry and prose taken from authentic sources.

Advanced French (Two Year Option)

1514 French IV (Advanced French, Year One)

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Teacher Recommendation and French III/ or Teacher Recommendation and Proficiency Exam

1515 French V (Advanced French, Year Two)

Grade Level: Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option,

Prerequisite: Teacher recommendation and French IV (Advanced French, year one)

French IV and V have been redesigned and combined in order to create a two year curriculum, entitled Advanced French.

The focus of the course will be continued development of the major skills of listening, speaking, reading, writing and seeing. Topics, interdisciplinary in nature, will include Francophone literature and culture, art, history, cinema, philosophy, science and ethics, as well as current events. Students will be expected to read authentic texts and to do research on an advanced level. Individual and team projects will be an integral part of this course.

Level IV and Level V students will be in the same class, doing the same work. Students have the option of completing only one year of the course, thereby receiving credit for French IV. Those who wish to continue will take the course the following year (different topical selections), receiving credit for French V.

1521 Spanish I

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: None

Special Note: **This course is not open to students with prior experience in Spanish.**

Students are expected to read, write and speak about their immediate world, which would include their interests, school life, family, friends and self. They will be able to ask for and understand basic information to be able to survive in the language. In addition this course will seek to enhance an understanding of the diverse cultures of the Spanish speaking world. Students will be able to read simple authentic texts such as newspaper clippings, headlines, and advertisements. In addition, they will also be able to read a variety of literature appropriate to their level (poetry, and short stories).

1522 Spanish II

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Spanish I and Teacher Recommendation/**or** Proficiency Exam and Teacher Recommendation

Students will build on all of the skills acquired in level I Spanish and will work toward developing a greater fluency in the language. The concept of the student and her or his "immediate world" will be expanded to the larger concept of "I and my extended world." Reading will now include lengthier articles, stories and short novels. In order to improve students' writing skill, they are required to keep a diary throughout the school year. Spoken and written language will progress from short sentence level to a more cohesive paragraph level, and will include past tense narration.

1523 Spanish III

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Spanish II and Teacher Recommendation/**or** Placement Exam and Teacher Recommendation

Students will be expected to be able to read, speak, and write about topics such as the differences of culture and customs between the Spanish-speaking countries and the American way of life, current events and various selections of authentic literature. Students will be required to keep a diary throughout the school year.

1524 Spanish IV

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Spanish III and Teacher Recommendation/**or** Proficiency Exam and Teacher Recommendation

Students will be expected to be able to read, speak, and write about topics in Spanish and Latin American literature, art, science, history, and/or current events.

1525 Spanish V

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Spanish IV and Teacher Recommendation/**or** Proficiency Exam and Teacher Recommendation

This year long course will focus on authentic literature of Spanish-speaking countries and Hispanic-American literature. Emphasis will be on oral, reading, and written skills.

1531 German I

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: None

Special Note: **This course is not open to students with prior experience in German.**

Students are expected to read, write and speak about their immediate world, which would include their interests, school life, family, friends and self. They will be able to ask for and understand basic information in order to survive in the language.

1532 German II

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: German I and Teacher Recommendation/**or** Proficiency Exam and Teacher Recommendation

Students will build on the survival skills attained in German I, while moving toward developing greater fluency in speaking and writing. The concept of the student and his or her "immediate world" will be expanded to the larger concept of "I and my extended world." Spoken and written language will progress from short sentence level to a more cohesive paragraph level. In a similar fashion, reading and listening comprehension will also be developed. Historical and cultural topics such as fairy tales, children's literature and film will be included.

1533 German III

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per year Pass/Fail option

Prerequisite: German II and Teacher Recommendation/ or Proficiency Exam and Teacher Recommendation

The students will build and elaborate on skills developed in Level 2 in order to explore their world in relation to that of the German speaking world. Each semester students will be expected to complete a project which requires them to gather and process the information in the target language. Students will read selected authentic texts of fictional and non-fictional natures which will provide the impetus for discussions.

1534 German IV

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: German III and Teacher Recommendation/or Proficiency Exam and Teacher Recommendation

Students will continue to explore German in the context of their personal world in relationship to the broader German speaking world. Students speaking and writing will be guided by the cultural elements as represented by the literature, the media and film of the German speaking world. Students will read selected authentic texts of fictional and non-fictional natures which will provide the impetus for discussions.

1535 German V

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: German IV and Teacher Recommendation/or Proficiency Exam and Teacher Recommendation

Students will continue to explore German in the context of their personal world in relationship to the broader German speaking world. Students speaking and writing will be guided by the cultural elements as represented by the literature, the media and film of the German speaking world. Students will read selected authentic texts of fictional and non-fictional natures which will provide the impetus for discussions.

1541 Japanese I

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: None

Special Note: **This course is not open to students with prior experience in Japanese.**

Primary emphasis is on developing oral proficiency in Japanese, although students will master katakana, hiragana, and some kanji as well. Focus will also be on building good pronunciation and listening skills. Students will learn to communicate in culturally appropriate ways, using basic sentence structures, and will be able to communicate about such things as the daily life and school schedule, and their families and their homes. They will also begin to learn how the structure of Japanese culture is reflected in the Japanese language.

1542 Japanese II

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Japanese I and Teacher Recommendation

Students will continue to develop oral and aural proficiency, as well as learning to read and write more kanji (Chinese characters). Students will continue to learn about Japanese society by learning how to speak both more casually and more politely. They will also learn to communicate in a more sophisticated way, using more compound sentence structures, and will learn to, for example, explain the cause for something or tell what they think.

1543 Japanese III

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per year Pass/Fail option

Prerequisite: Japanese II and Teacher Recommendation

A continuation of Japanese II, and while oral communication will remain very important, more and more emphasis will be placed on reading and writing, and students will continue to expand their kanji knowledge.

1551 Russian I

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: None

Special Note: **This course is not open to students with prior experience in Russian.**

Students are expected to master the Cyrillic alphabet which will enable them to read, write and speak in Russian about their immediate world. The conversational topics of the Russian I course include family, food, professions, health, body parts, house, city, transportation, holidays, seasons, free time, and clothes.

1552 Russian II

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Russian I and Teacher Recommendation

Students will build on the language skills attained in Russian I, while moving toward developing greater fluency in speaking and writing. Spoken and written language will progress from short sentence level to a more cohesive paragraph level. Students will learn to communicate in a more sophisticated way, using more compound sentence structures, and will learn to, for example, explain the cause for something or tell what they think.

1553 Russian III

Grade Level: Sophomore/Junior/Senior

Length: One Year

Credit: 1.0 per Year Pass/Fail option

Prerequisite: Russian II and Teacher Recommendation

A continuation of Russian II, and while oral communication will remain very important, more and more emphasis will be placed on reading and writing. Students will be expected to read selections from Russian literature, which will include short stories by Chekov, Bunin and Pushkin, as well as poetry by various poets. The course will also include advanced Russian grammar such as participle and conditional.

FINE ARTS

1600 (F) Symphonic Band

1601 (S)

Grade Level: Sophomore/Junior/Senior

Length: One - Two Semester(s)

Credit: .50 - 1.00 Pass/Fail option

Prerequisite: Play traditional wind/percussion instrument at basic level

Students enrolled in Symphonic Band will be provided the opportunity to examine, rehearse, and perform varied styles of band music of both Western and non-Western composers in a laboratory setting. Experiences in chamber music, symphonic band, and pep band will be included. In addition, materials pertaining to music history, theory, aural skills, and musicianship will be presented, both from a scientific as well as an artistic approach. (Students enrolled in this course are eligible to participate in any music sponsored co-curricular activity.)

1602 (F) Symphonic Wind Ensemble

1603 (S)

Grade Level: Junior/Senior

Length: One - Two Semester(s)

Credit: .50 - 1.00 Pass/Fail option

Prerequisite: Participation in IMSA Symphonic Band; play traditional wind/percussion instrument at an advanced level. Admission by instructor's approval required.

Students enrolled in Symphonic Wind Ensemble will be provided the opportunity to examine, rehearse and perform varied styles of wind ensemble literature in a laboratory setting. In most cases, only the most technically and musically advanced students will be admitted to this course. The literature to be considered for this course will include large chamber music, pieces written specifically for wind ensemble (small chamber band) and orchestral transcriptions. Certain students enrolled in this course are also entitled, with instructor's approval, to perform as wind and percussion players for the IMSA Symphony Orchestra. (Students enrolled in this course are eligible to participate in any music sponsored co-curricular activity.)

1604 (F) Symphony Orchestra

1605 (S)

Grade Level: Sophomore/Junior/Senior

Length: One - Two Semester(s)

Credit: .50 - 1.00 Pass/Fail option

Prerequisite: Play stringed instrument (violin, viola, 'cello, or string bass) at basic level

Students enrolled in the Symphony Orchestra will be provided the opportunity to examine, rehearse, and perform varied styles of string music of both Western and non-Western composers in a laboratory setting. Experiences in chamber ensemble, string orchestra, and full symphony orchestra will be included in the class. In addition, materials pertaining to music history, theory, aural skills, and musicianship will be presented, both from a scientific as well as an artistic approach. (Students enrolled in the Music Program are eligible to participate in any music sponsored co-curricular activity.)

1610 (F) Concert Choir

1611 (S)

Grade Level: Sophomore/Junior/Senior

Length: One - Two Semester(s)

Credit: .50 - 1.00 Pass/Fail option

Prerequisite: Basic level ability of matching pitches

This course provides students with the opportunity to explore choral music on many levels. As performers they will discover and practice multiple aspects of singing including the development of proper vocal technique, the interpretation of music with stylistic and historical accuracy and the synergy of ensemble singing. Students will develop critical thinking and problem solving skills through rehearsal in small and large groups settings, score study, regular sight-singing experiences as well as through observation and critiques of both their own and other ensembles' performances. Two major concerts are scheduled each semester. (Students enrolled in the Music Program are eligible to participate in any music sponsored co-curricular activity.)

1612 (F) Chamber Choir

1613 (S)

Grade Level: Junior/Senior

Length: One - Two Semester(s)

Credit: .50 - 1.00 Pass/Fail option

Prerequisite: Participation in IMSA Concert Choir or by audition; moderate to good music reading skills. Instructor's approval required.

This course provides experienced singers with the opportunity to explore and perform advanced-level choral literature. The fall semester emphasis is on Renaissance and a *cappella music culminating in a series of Madrigal concerts in December. The spring semester provides opportunities for student conducting and for solo, small and large ensemble singing through many diverse performing venues. Students will be challenged to continue developing their musical literacy, interpretive performing skills and aesthetic sensitivity through their study of a great variety of choral music. Two to four major concerts are scheduled each semester. (Students enrolled in the Music Program are eligible to participate in any music sponsored co-curricular activity.)*

1620 Advanced Placement Music Theory

Grade Level: Junior/Senior

Length: One Year

Credit: 1.0 Pass/Fail option

Prerequisite: None

Students will learn fundamental terminology and notation of intervals, scales, triads, chords, key signatures, rhythm and meter, transposition, and visual analysis. Students will also learn to make judgments about melody, harmony, tonality, rhythm and meter, texture, small and large forms, and errors in performance, as well as to recognize particular compositional processes such as harmonic functions, cadence or scale types, motivic transformations, and sequential patterns according to their corresponding historical period. Although the focus of this course is primarily geared toward the study of harmony, basic contrapuntal techniques such as canon, round, fugue, passacaglia, and fantasie will be included. A strong background in music reading is highly recommended.

1630 Art Design I

Grade Level: Sophomore/Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail option

Prerequisite: None

Students will investigate the elements and principals of design through various styles and periods of art and art history. Students will create both two and three dimensional solutions to design problems encountered. An emphasis will be placed on drawing, problem solving, aesthetics and reflection.

1631 Ceramics

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: None

This course will provide students with the opportunity to explore methods and characteristics of working with clay including handbuilding and throwing on the potter's wheel. Students will solve ceramic design problems by considering aesthetic, historical, and technical processes. Students will have the opportunity to investigate traditional as well as new advances in technology in their learning, including firing methods, clay and glaze formulation and function. Demonstration of student learning will take place through production, critique and self-assessment.

1633 Photography

Grade Level: Junior/Senior
Length: One Semester
Credit: .50 Pass/Fail option
Prerequisite: None

This course will provide students with the opportunity to obtain a general overview of the uses and history of photography. The course is specific to black and white photography. Students will learn to use photographic and aesthetic terminology and obtain practice in picture taking, film processing, photo printing, and professional display techniques. Through these experiences, students will gain confidence in both creating and evaluating photography as an art form. **Students must supply their own 35mm SLR cameras and batteries.**

WELLNESS

1710 Sophomore Wellness

Grade Level: Sophomore
Length: One Semester
Credit: 0.0 Pass/Fail Only
Prerequisite: None

This course is designed as an integrative experience which combines principles and concepts of Health Education, Physical Education and Life Skills Management. Learning experiences are provided using a holistic wellness approach which seeks to enable all students to "establish and commit to a wellness lifestyle in the development of the whole self." The Academy believes that "a good life is characterized by harmony among the

emotions, the body, the intellect, and the spirit." Students are expected to pursue health-related physical activities which promote the accomplishment of personal wellness goals. Students are also required to demonstrate proficiency in Reflective Thinking and Writing, Swimming, Adult CPR, Planning and Goal-Setting, Stress Management, and Physical Fitness.

Wellness Electives

Grade Level: Sophomore, Junior, or Senior

Length: One semester

Credit: 0.0 Pass/Fail Only

Prerequisite: None

All students will select an activity course which will emphasize health-related and skill-related fitness as a foundation for efficient and effective movement. Each course will offer basic skills, rules, strategies, etiquette, and a historical and cultural perspective..

FALL

- 1716 Tennis and Badminton
- 1717 Golf and Water Polo
- 1718 Flag Football and Basketball
- 1719 Beginning Roller Blading and Fencing
- 1721 10K Training and Strength Training and Conditioning
- 1722 Bowling and Relaxation Techniques

SPRING

- 1726 Beginning and Intermediate Swimming
- 1727 Advanced Swimming, Water Polo and Lifeguarding
- 1728 Individualized Physical Fitness
- 1729 Fencing and Power Walking
- 1731 Dance: Ballroom and Folk
- 1732 Badminton and Tennis

1750 Independent Wellness

Grade Level: Sophomore, Junior or Senior

Length: Four Semesters

Credit: 0.0 Pass/Fail Only

Prerequisite: None

This requirement is designed as an independent wellness experience. Students will complete the Fitnessgram Assessment and design and implement an individualized Wellness Plan with an emphasis on physical fitness goals and strategies. Students are required to complete and log three hours of physical activity each week (interscholastic sports participation or a Wellness Elective will satisfy this requirement), and complete a Reflective Thinking Log each semester.

Independent Study Project

Grade Level: Junior/Senior

Length: One Semester

Credit: .50 Pass/Fail **Project may not be used to satisfy
a graduation requirement**

Prerequisite: Team Leader and Principal's Office approval

<u>Team</u>	<u>Fall</u>	<u>Spring</u>
Mathematics	1180	1181
Computer Science	1182	1183
Science	1280	1281
Chemistry	1282	1283
Physics	1284	1285
Biology	1286	1287
English	1380	1381
Social Science	1480	1481
Foreign Language	1580	1581
French	1582	1583
Spanish	1584	1585
German	1586	1587
Music	1680	1681
Art	1682	1683
Wellness	1780	1781
Academy	1880	1881

Independent Study projects enable students to investigate an approved academic topic of their choice under the sponsorship of a faculty advisor. The study may be started as early as the summer preceding the junior year; however, it must be completed by 2 weeks before the end of the semester. The process of this study is as important as the product: a journal-record and where appropriate an annotated bibliography must, therefore, precede submission of the final product, which may be experimental results, a performance, a lecture, a work of fine or applied art, or a paper. Interested students should pick up a packet of materials in the Principal's Office. (The credit received for this project may not be applied toward graduation requirements.)

Senior Research Project

Grade Level: Senior

Length: One - Two Semester(s)

Credit: .50 - 1.00 Pass/Fail option

Prerequisite: Team Leader and Principal's Office approval

<u>Team</u>	<u>Fall</u>	<u>Spring</u>
Mathematics	1190	1191
Computer Science	1192	1193
Science	1290	1291
Chemistry	1292	1293
Physics	1294	1295
Biology	1296	1297
English	1390	1391
Social Science	1490	1491
Foreign Language	1590	1591
French	1592	1593
Spanish	1594	1595
German	1596	1597
Music	1690	1691
Art	1692	1693
Wellness	1790	1791
Academy	1890	1891

Senior Research Projects enable seniors to investigate an approved topic of their choice under the sponsorship of a faculty advisor. The project must be designed and appropriate approval granted before the close of the student's junior year.

Significant progress on the project must be demonstrated to the faculty advisor at the beginning of the student's senior year, at the close of the first quarter of that year, and at the close of the first semester. The project must be completed by the third quarter of the student's senior year. The process of this project is as important as the product: a journal-record/research notebook and an annotated bibliography must, therefore, precede submission of the final product, which may be a performance, a lecture, a work of fine art, or a paper.

Projects to be submitted for credit to more than one instructional team must be approved by all participating teams prior to the completion of the student's junior year. Each participating team will monitor the progress of the project at critical checkpoints.

The student's finished product will be presented to their project review committee during the second semester of the student's senior year for determination of credit. Students may be called upon to present the results of their research in other settings as well.

(January 28, 1998)