

LEARNING OPPORTUNITIES 2006/2007

MATHEMATICS

Students must enroll in a core mathematics course each semester, advancing to the highest level possible during their six semesters at IMSA. Numerous elective options are available for expanded exploration.

1112(F) Geometry I/II (core)

Grade Level: Sophomore/Junior/Senior
Length: One Semester (**offered Fall Semester only**)
Credit: 0.50
Prerequisite: Initial Placement by Math Department

This is a one semester accelerated course in Euclidean Geometry for students with a solid background in algebra. In addition to content from a standard year long geometry course; problem solving, algebra review, conjecture, and proof are emphasized. Students will also have the opportunity, using computers, to explore geometry dynamically.

1121(F/S) Mathematical Investigations I/II (core)

Grade Level: Sophomore/Junior
Length: Two Semesters
Credit: 1.0
Prerequisite: Initial Placement by Math Department

The Mathematical Investigations courses integrate topics from all areas of pre-calculus mathematics. In these courses, 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. Mathematical Investigations I/II is a two-semester sequence of courses. The first semester emphasizes advanced algebraic skills, linear relationships, equations and applications, data analysis and modeling, and an introduction to functions. The second semester concentrates on the study of matrices, beginning sequences, functions and function transformations, and exponential functions.

1123(F) Mathematical Investigations II (core)

1124(S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: 0.50
Prerequisite: Initial Placement by Math Department

The Mathematical Investigations courses integrate topics from all areas of pre-calculus mathematics. In these courses, 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. MI-2 focuses on the study of matrices, linear relationships, and functions, while also introducing exponential functions and sequences and series.

1125(F) Mathematical Investigations III (core)

1126(S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: 0.50
Prerequisite: Mathematical Investigations II or Initial Placement by Math Department

The Mathematical Investigations courses integrate topics from all areas of pre-calculus mathematics. In these courses, 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. MI-3 builds on MI-2, extending the concept of function and applications to include logarithmic functions, polynomial functions, rational functions, and trigonometric functions.

1127(F) Mathematical Investigations IV (core)

1128(S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: 0.50
Prerequisite: Mathematical Investigations III or Initial Placement by Math Department

The Mathematical Investigations courses integrate topics from all areas of pre-calculus mathematics. In these courses, 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. MI-IV focuses on the study of sequences and series, vectors, advanced trigonometry, polar coordinates, complex numbers, and topics selected from combinatorics, conics, Binomial Theorem and mathematical induction.

1132(F) AB Calculus I (core)

Grade Level: Junior/Senior
Length: One Semester
Credit: 0.50
Prerequisite: Mathematical Investigations IV **and** recommendation of MI Instructors

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 (core)

1135(S)

Grade Level: Junior/Senior
Length: One Semester
Credit: 0.50
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 AB Calculus II and I will have completed the equivalent of a semester of college level calculus.

1140(F) BC Calculus I (core)

1141(S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: 0.50
Prerequisite: Mathematical Investigations IV **and** recommendation of MI Instructors

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 with help from technology these will be seen from graphical, numerical, and analytic points of view.

1142(F) BC Calculus II (core)

1143(S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: 0.50
Prerequisite: BC Calculus I

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

1144(F) BC Calculus III (core)

1145(S)

Grade Level: Sophomore/Junior/Senior
Length: One Semester
Credit: 0.50
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 (**offered Spring Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisites: Mathematical Investigations III or recommendation of Instructor

This course is a study of advanced topics in geometry selected from such areas as: points of concurrence, pedal triangles, Miquel points, Wallace lines, 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 (**offered both Fall and Spring Semesters**)
Credit: 0.50 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 bivariate data will be created and analyzed. Computer software is used for dynamic modeling of data. 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.

1153 Mathematica and Mathematics

Grade Level: Junior/Senior
Length: One Semester [**Semester(s) offered based on student interest**]
Credit: 0.50 Pass/Fail option
Prerequisite: Mathematical Investigations IV OR Mathematical Investigations III and permission of instructor.

Students will learn how to use *Mathematica* computer software to help model and explore mathematical topics. Much of the course will be project oriented, including creating interactive notebooks and programming, depending upon individual student backgrounds and interests. Students will work with 2D and 3D graphics, colors, and animations. No prior experience with *Mathematica* or with computer programming is necessary.

1154(F) Multi-Variable Calculus

1155(S)

Grade Level: Junior/Senior
Length: One Semester [**Semester(s) offered based on student interest**]
Credit: 0.50 Pass/Fail option
Prerequisite: BC Calculus III **and** recommendation of 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.

Number Theory

Grade Level: Junior/Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: BC Calculus I (which in exceptional cases may be taken concurrently) **and** permission of Instructor **and** Mathematics Operational 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 [**Semester(s) offered based on student interest**]
 Credit: 0.50 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 will not receive credit for Problem Solving if they have prior credit in Advanced Problem Solving.**

1158

Advanced Problem Solving

Grade Level: Junior/Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: BC Calculus I, or permission of instructor; **and** Mathematics Operational Coordinator. Student should have a very strong score on the AMC contest, though need not be a mathlete.

The course will emphasize advanced problem solving techniques and strategies used on the AIME, ARML, Mandelbrot and AVASC level contests. Methods of proof, derivation, and validation will be highlighted in solutions to non-routine problems. The course content will focus upon topics from advanced geometry, combinatorics, theory of equations, series, sequences, trigonometry and number theory, etc.

1159

Discrete Mathematics

Grade Level: Junior/Senior
 Length: One Semester [**Semester(s) offered based on student interest**]
 Credit: 0.50 Pass/Fail option
 Prerequisite: Mathematical Investigations III or recommendation of Instructor

This course is a study of topics that are based on concepts, ideas, and algorithms in mathematics that can, in some manner, be divided into "separate" or "discontinuous" (and thus, *discrete*) parts. Major areas of mathematical content addressed in the course can include social applications and decision making (such as voting theory), techniques of counting, permutations, combinations, probability, graph theory (including applications of paths and circuits in graphs, graph coloring, and spanning trees), recursion, algorithm development, pattern generation and recognition in a variety of contexts, Pascal-type triangles and their connection to other mathematical content, modular math, and modeling. Individual and group investigations and explorations are emphasized throughout the course.

1160
1161

Introduction to Algebraic Structures I

Introduction to Algebraic Structures II

(Use 1161 only if enrolled in 1160 last year.)

Grade Level: Junior/Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Multi-variable Calculus or Advanced Problem Solving or Number Theory **and** permission of the Instructor **and** Mathematics Operational Coordinator.

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 semester. 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 perspectives. 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.

1162(F)
1163(S)

Advanced Topics in Mathematics

Grade Level: Junior/Senior
Length: One Semester
Credit: 0.50 Pass/Fail option
Prerequisites: Multi-Variable Calculus and one of Advanced Problem Solving, Number Theory, or Algebraic Structures I **and** permission of Instructor **and** Mathematics Operational Coordinator

For students who have finished the core mathematics program and for whom there is no other appropriate mathematics course available. Student and instructor will select topics jointly. Past years' topics have been complex variable, topology, and real analysis. Course may be used as core mathematics course.

1164(F)
1165 (S)

Differential Equations

Grade Level: Junior/Senior
Length: One Semester [**Semester(s) offered based on student interest**]
Credit: 0.50 Pass/Fail option
Prerequisite: BC Calculus II (or AB Calculus 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, trouble-shoot, customize, or develop a variety of differential equation modeling schemes to suit his or her own particular needs.

Introduction to Visual Basic

Grade Level: Junior/Senior
 Length: One semester [**Semester(s) offered based on student interest**]
 Credit: 0.50 Pass/Fail option
 Prerequisites: Mathematical Investigations III or permission of instructor AND no previous computer science coursework.

This course is an introduction to computer programming using the Visual Basic computer language. Visual Basic is intended specifically for students who wish to learn about computer programming but do not have aspirations in computer science related fields. (Any student wishing to take APCS or Computer Seminar must take Intro to Computer Science)

Introduction to Computer Science

Grade Level: Junior/Senior
 Length: One Semester (**offered both Fall and Spring Semesters**)
 Credit: 0.50 Pass/Fail Option
 Prerequisite: Mathematical Investigations III or recommendation of Instructor

Intro to C.S. is an introduction to programming and computer science using the current APCS language (Java). The course emphasizes programming methodology concentrating on problem solving and algorithm development, using object oriented programming. It is intended to feed naturally into APCS (1171).

AP Computer Science

Grade Level: Junior/Senior
 Length: One Semester (**offered Spring Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Introduction to C.S. or recommendation of Instructor

This course will complete the AP Computer Science AB syllabus. Topics may include: recursion, stacks, queues, trees, linked lists, advanced programming techniques including advanced sorts and searches. A major focus of the course will be an analysis of the APCS case study.

Computer Seminar

Grade Level: Junior/Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Introduction to C.S. or recommendation of Instructor

This course will study advanced computer science topics including object oriented programming. Students will be expected to complete several individual and group projects that will involve research, programming, and presentation of results.

Assembly Language Programming

Grade Level: Junior/Senior
 Length: One Semester [**Semester(s) offered based on student interest**]
 Credit: 0.50 Pass/Fail option
 Prerequisite: Introduction to C.S. or recommendation of Instructor

This course will introduce the students to the mathematics of computing and 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 that manipulate text and numeric data. The remainder of the semester will be spent writing more difficult programming activities. Possibilities include, but are not limited to, specific hardware interfaces, direct screen manipulation, and interfacing assembly language routines with high-level programs.

SCIENCE

The **Core Science Program** consists of four one semester courses: 1233, Scientific Inquiries – Physics; 1213, Scientific Inquiries – Chemistry; 1253, Scientific Inquiries – Biology; and 1273, Methods in Scientific Inquiry. All students are required to complete 1273, Methods in Scientific Inquiry. Students new to IMSA who demonstrate an exemplary past academic record in biology, physics, or chemistry may choose to take a placement exam in that particular subject. A satisfactory placement exam score will demonstrate competency in the subject matter of that particular course and the student will then be enrolled in an appropriate elective course. Completion of the science core program or its equivalent, i.e. satisfactory grades in the appropriate placement exams allows students to enroll in a large number of electives in earth/space science, biology, chemistry, physics, and applied sciences.

1203 Survey of Organic Chemistry

Grade Level: Junior/Senior
Length: One Semester
Credit: 0.50 Pass/Fail option
Prerequisite: Scientific Inquiries or Scientific Inquiries - Chemistry or equivalent

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. There will be a strong emphasis on laboratory work, which 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 (**offered Fall Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Scientific Inquiries or Scientific Inquiries – Chemistry or equivalent

1205 * Organic Chemistry II

Grade Level: Junior/Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50 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 that includes discussion and problem solving. Experiments are included to introduce laboratory techniques as well as to demonstrate concepts introduced in the classroom. State-of-the-art instruments will be utilized in the laboratory. IMSA is one of the few high schools in the country to have a Fourier Transform Infra Red instrument and the only high school to have a Fourier Transform Nuclear Magnetic Resonance instrument. Connected with the course is an out of class NMR Group that meets once a week to enhance NMR theory and use of the instrument.

1206 Biochemistry

Grade Level: Junior/Senior
Length: One Semester
Credit: 0.50 Pass/Fail option
Prerequisite: Scientific Inquiries or Scientific Inquiries - Chemistry or Scientific Inquiries - Biology or equivalent

Biochemistry is the study of the substances found in living organisms and of the chemical reactions underlying life processes. This science is a branch of both chemistry and biology. The chief goal of biochemistry is to understand the structure and behavior of biomolecules. These are carbon containing compounds that make up the various parts of the living cell and carry out the chemical reactions that enable it to grow, maintain and reproduce itself, as well as use and store energy. Some of the topics to be discussed are: amino acids, proteins, carbohydrates, lipids, nucleic acids, immunoglobulins and enzymes; their structure, regulation and function. Systems of the human body; their function,

regulation (hormones) and pathophysiology will also be discussed. The laboratories in Biochemistry will include separation techniques used in biology, such as molecular sieving, cellulose acetate and gel electrophoresis, and a project designed by the student.

1208

Facets of Thermodynamics

Grade Level: Junior/Senior
Length: One Semester
Credit: 0.50 Pass/Fail option
Prerequisite: Scientific Inquiries or Scientific Inquiries - Chemistry or Scientific Inquiries - Physics or equivalent

Facets of Thermodynamics is an introduction to the analysis of several thermodynamic systems: heat engines, refrigerators, computers, cells, and the universe. Principles of these systems are extracted from experimental observations. We use the simple model of ideal gas to exemplify the full power of thermodynamic laws. A large variety of examples and applications will increase the confidence in validity and generality of the Thermodynamics Laws. Thermodynamics is a valuable research tool for sciences like: chemistry, physics, biology, astrophysics, engineering and many more.

1211

* Advanced Chemistry - Matter and Molecules

Grade Level: Junior/Senior
Length: One Semester (**offered Fall Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Scientific Inquiries or Scientific Inquiries - Chemistry or equivalent

1212

* Advanced Chemistry - Reactions and Qualitative Analysis

Grade Level: Junior/Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Scientific Inquiries or Scientific Inquiries - Chemistry or equivalent

* Advanced Chemistry consists of two one-semester electives. Advanced Chemistry, Matter and Molecules is only offered in the fall and Advanced Chemistry, Reactions and Qualitative Analysis is only offered in the spring. Students may take either one in any sequence but it is recommended that those who plan on taking the AP or SATII examinations in chemistry take both courses. Emphasis is placed on laboratory exploration, demonstrations, discussions and problem solving to further advance the student's understanding of the material. Chemical concepts introduced in their sophomore science course are reintroduced and expanded upon in addition to new content. In the first semester course the focus is on basic measurement skills, periodicity, electronic structure, bonding/geometry, states of matter and thermodynamics. In the second semester course, students investigate the rates of chemical reactions, chemical equilibrium and electrochemistry before applying these principles in order to identify the ions present in an unknown solution.

1213

Scientific Inquiries - Chemistry

Grade Level: Sophomore
Length: One Semester
Credit: 0.50
Prerequisite: None

Scientific Inquiries – Chemistry is a one semester course required of all IMSA sophomores. This course addresses four areas of science: physical and chemical properties of matter, states of matter, reactions, and energetics. The chemical basis for the behavior of Earth's composing materials is included. Students encounter concepts and materials in this course through a combination of lab-based activities, guided inquiry, group discussion, and direct instruction.

1223

* Calculus-based Physics - Mechanics

Grade Level: Junior/Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent and Mathematical Investigations IV

1224

* Calculus-based Physics - Electricity/Magnetism

Grade Level: Junior/Senior
 Length: One Semester (**offered Spring Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent and AB I or BC I Calculus. Successful completion of Calculus-based Physics – Mechanics is strongly recommended.

* 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: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent

Astronomy is generally a “remote” science concerned with observing objects beyond Earth’s atmosphere. Astrophysics is concerned with the detailed inner workings of these astronomical bodies (and Earth itself) – how they transform energy and how they form and evolve. Astrophysics grows not only through remote observations but also through terrestrial experiments and computer modeling. The course will provide a brief overview of astronomy to serve as context and springboard to further investigations, much of which will be student-directed. Further background content will be introduced during the course, and will include nuclear and atomic science, electromagnetism, gravity and entropy.

1226

Observational Astronomy

Grade Level: Junior/Senior
 Length: One Semester
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent

Observational Astronomy is a course for students who wish to gain an understanding of the night sky. The identification of stars and their patterns, the use of coordinate systems, and celestial mechanics are the topics of emphasis. The naked-eye, binoculars, telescopes, and CCD imaging will be utilized extensively to examine the universe around us. There will be one evening meeting per week. Students may take this course in conjunction with course 1445, Mind and Cosmos: A Cultural History of Astronomy.

1228

Electronics

Grade Level: Junior/Senior
 Length: One Semester
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent

This is an introductory course in electronics designed for students with an interest in hands-on experience with basic electronics. Students are encouraged to discover basic electrical concepts through laboratory-based discovery, problem-solving and laboratory analysis. Projects, incorporating the knowledge gained through guided discovery, provide a culminating experience for the students. The course will address topics in both analog and digital electronics.

Modern Physics

Grade Level: Junior/Senior
 Length: One Semester
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent

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

1231

Advanced Physics - Motion and Forces

Grade Level: Junior/Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent

This course continues the study of basic physics concepts begun in sophomore level physics. It reviews some previously covered topics and presents additional material on conservation laws, rotational kinematics and dynamics, statics, and oscillating systems. The emphasis throughout is on laboratory-based discovery, problem-solving techniques, and laboratory analysis. This course, as well as Advanced Physics – Waves and Fields, and Modern Physics are recommended for students who intend to take the AP Physics B exam.

1232

Advanced Physics - Waves and Fields

Grade Level: Junior/Senior
 Length: One Semester (**offered Spring Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Scientific Inquiries - Physics or equivalent

This course continues the study of basic physics concepts begun in sophomore level physics. It reviews some previously covered topics and presents additional material on wave behavior, sound, light, ray optics, electricity, and magnetism. The emphasis throughout is on laboratory-based discovery, problem-solving techniques, and laboratory analysis. This course, as well as Advanced Physics –Motion and Forces, and Modern Physics are recommended for students who intend to take the AP Physics B exam.

1233

Scientific Inquiries - Physics

Grade Level: Sophomore
 Length: One Semester
 Credit: 0.50
 Prerequisite: None

Scientific Inquiries – Physics is a one semester course required of all IMSA sophomores. The course addresses four broad conceptual areas: kinematics and the equations of motion, Newton's first and second laws, the conservation of energy, and Newton's law of gravitation. These laws are used to explain the mechanics of the solar system. Students encounter concepts and materials in this course through a combination of lab-based activities, guided inquiry, group discussion, and direct instruction.

1253

Scientific Inquiries - Biology

Grade Level: Sophomore
 Length: One Semester
 Credit: 0.50
 Prerequisite: None

Scientific Inquiries – Biology is a one semester course required of all IMSA sophomores. This course addresses four broad conceptual areas: cell structure and function, metabolism, heredity, and evolution. The role of plate tectonics in the evolution of life on Earth is included. Students encounter concepts and materials in this course through a combination of lab-based activities, guided inquiry, group discussion, and direct instruction.

1254

Evolution, Biodiversity, and Ecology

Grade level: Junior/Senior
 Length: One semester
 Credit: 0.5 Credits Pass/Fail option
 Prerequisite: Scientific Inquiries or the Core Science Program or equivalent

This is a one-semester course that explores the diversity of living organisms and their interactions with each other and the environment. Students will investigate the biological species concept, mechanisms for evolution and speciation, causes of extinction, and patterns of biological diversity across geographic space and time. They will also study the varied ways that organisms interact with members of their own species, with different species, and with their physical surroundings. Some field trips and/or outdoor activities will be included as a part of this course.

1255

Molecular and Cellular Biology

Grade level: Junior/Senior
 Length: One semester
 Credit: 0.5 Credits Pass/Fail option
 Prerequisite: Scientific Inquiries or the Core Science Program or equivalent

This is a one-semester course that explores modern molecular and cellular biology as well as its foundation in classical genetics. Students will investigate transmission genetics, the informatics in the structure of biomolecules, as well as the function of biomolecules in the control of the cell cycle, cellular signaling pathways, and tissue development. Students will engage in emerging genetic and molecular techniques as they conduct laboratory work with the tools of modern biology.

1256

Microbes and Disease

Grade level: Junior/Senior
 Length: One semester
 Credit: 0.5 Credits Pass/Fail option
 Prerequisite: Scientific Inquiries or the Core Science Program or equivalent

This is a one-semester integrated course that explores topics related to microbes and the relationship between infection and human defense mechanisms. Topics include the germ theory, microbial structure and function, invasiveness and pathogenicity, the human immune system, epidemiology, and an introduction to emerging infectious diseases. The course ends with students conducting case studies in infectious disease. Microbial life will be studied in the laboratory setting by using non-pathogenic microbes so that students attain the appropriate laboratory skills.

1257

Physiology and Disease

Grade level: Junior/Senior
 Length: One semester
 Credit: 0.5 Credits Pass/Fail option
 Prerequisite: Scientific Inquiries or the Core Science Program or equivalent

This is a one-semester integrated course that explores topics of human physiology and the changes in human physiology that result from non-infectious disease or physiological conditions. Topics include cellular physiology, metabolic functions and nutrition, and systems homeostasis. A significant student inquiry opportunity is presented through simulations and the Biopac system and software. The course ends with student-led seminars that detail their understanding of the etiology and physiology of different non-infectious diseases and conditions.

1263

Environmental Science

Grade Level: Junior/Senior
 Length: One Semester [**Semester(s) offered based on student interest**]
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or the Core Science Program or equivalent

Students in this inquiry-based course will examine a broad range of topics that serve as the foundation for environmental science. These topics include plate tectonics, biomes and global climate patterns, energy in the earth system, atmospheric and oceanic processes, geological history and the fossil record, and current environmental issues. These topics are a substantial part of the Environmental Science AP Exam. Students will use computer technology to collect and map environmental data, and will be engaged in an inquiry project of their own choosing.

1265

Planetary Science

Grade Level: Sophomore/Junior/Senior
 Length: One Semester [**Semester(s) offered based on student interest**]
 Credit: 0.50 Pass/Fail option
 Prerequisite: Scientific Inquiries or Core Science Program or equivalent

Although our understanding of planetary evolution is in its infancy, public policy should be informed by planetary sciences. Policy decisions that may require changes in human behavior should be guided by this uncertain science and also by the evolving ethical framework of human action. Planetary Science reviews the science associated with population and with patterns of use in the energy, transportation, and agricultural sectors. Participants will adopt a position and develop a reasoned argument in support of this position with the guidance of advocates from outside of the Academy. Participants will contribute to the development of a web-based resource that serves a critical and unmet need by providing a voice for those who will soon be the decision-makers.

1270

Applied Engineering

Grade Level: Junior/Senior
 Length: One Semester [**Semester(s) offered based on student interest**]
 Credit: 0.50 Pass/Fail option
 Prerequisite: Successful completion of or concurrent enrollment in Advanced Physics – Motion and Forces or Calculus-based Physics – Mechanics

This course continues the study of physics concepts learned in previous science courses. Students will engage in a study of various engineering areas such as electrical, industrial, and mechanical. Sessions will take place on Inquiry Days and some may be offsite in collaboration with Northern Illinois University. Students will also complete a team project related to their studies in engineering, such as building and programming a robot for a specified competition.

1273

Methods in Scientific Inquiry

Grade Level: Sophomore
 Length: One Semester
 Credit: 0.50
 Prerequisite: None

Methods in Scientific Inquiry is a one-semester course that is required of all IMSA sophomores. The course explicitly addresses three broad skills areas encompassed by the nature of science: data acquisition and analysis, experimental design, and written and oral communication. Activities will support the development of basic skills across the science disciplines and promote an understanding of scientific inquiry and the nature of research.

Science, Society, and the Future (Science Credit)

Grade Level: Senior
Length: One Semester (**offered Fall Semester only**)
Credit: 0.50 (**Science**) Pass/Fail option
Prerequisite: Topics in American Studies and World Studies and Scientific Inquiries or the Core Science Program or equivalent

The focus of this course is on issues where science and technology interact with human health and welfare. The students are expected to address real world issues in realistic problem-based learning scenarios. Each semester has between 2 to 4 “problems” that are to be addressed by the students. The problems fit under a conceptual umbrella that connect them in some way. The overall goal of the course is to have students bring all they have learned of science, analysis, and ethics to bear on a current problem of significance.

ENGLISH

1311 Literary Explorations I

Grade Level: Sophomore
Length: **Two Semesters**
Credit: 0.50 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 various forms for different purposes. Students will explore readings of aesthetic and cultural significance from American and world literature, focusing in particular on their thematic and historical connections. Commonly taught works include Homer's Odyssey, a Theban play by Sophocles, Shakespeare's Tempest or Othello, and Mark Twain's Adventures of Huckleberry Finn.

1321 Literary Explorations II

Grade Level: Junior
Length: **Two Semesters**
Credit: 0.50 per semester
Prerequisite: Literary Explorations I

Students continue to develop their skills in reading, writing, discussion, and performance. Juniors will explore readings of aesthetic and cultural significance from British and world literature, focusing in particular on their thematic and historical connections. Commonly taught works include a Euripidean drama, Shakespeare's Hamlet, Joseph Conrad's Heart of Darkness, and T. S. Eliot's The Waste Land.

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

Grade Level: Senior
Length: **Two Semesters**
Credit: 1.0 per Year
Prerequisite: Literary Explorations II

This yearlong course explores modern American poetry (definition and expression): its mathematical clarity and symmetry; its intellectual freedom; its contextual voices (spaces), dissonant and harmonious; its fundamental nature. We begin with B. H. Fairchild and end with Adrienne Rich, seeking our connection to the collective while listening to our own voices, "a journey of discovery and exploration for the writer as well as the reader" (Marge Piercy). Poets include Donald Hall, Walt Whitman, Denise Levertov, Wallace Stevens, A. R. Ammons, Elizabeth Bishop, and T. S. Eliot. An important component of this course is acting as pen pals and mentors to a class of second-graders at a local grade school; we frequently conduct our class at the elementary school. Time during fourth quarter is often set aside for student-centered poetry workshops, directed, when possible, by guest poets.

FALL SEMESTER SENIOR ENGLISH OFFERINGS

1335 Topics in World Literature: Modern World Fiction

Grade Level: Senior
Length: One Semester (**offered Fall Semester only**)
Credit: 0.50
Prerequisite: Literary Explorations II

We will read a selection of texts spanning the twentieth century (and samples from the turn of the millennium), and the globe. We will look at this literature (mostly in the form of short fiction, ranging from such writers as Borges, Faulkner and Kafka, to Achebe, Bei Dao and Akutagawa) as defining and expressive of modernism and post-modernism, in their many facets. More specifically, we will consider kinds of, approaches to, and functions of realism; challenges to realism; what constitutes a "modern aesthetic sensibility," and what ends such a sensibility serves; and some major thematic issues particularly relevant to the twentieth century.

1338 Belief in Question in Modern Literature

Grade Level: Senior
Length: One Semester (**offered First Semester only**)
Credit: 0.50
Prerequisites: Literary Explorations II

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 Fall Semester only**)
Credit: 0.50
Prerequisite: Literary Explorations II

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.

1345 Film Study: History and Criticism

Grade Level: Senior
Length: One Semester (**also offered in the Spring Semester as course #1375**)
Credit: 0.50
Prerequisite: Literary Explorations II

In this class, students will study the following: the development of film as an art form and method of documentation; the language of film; a selection of influential American and international films and filmmakers; genres of film criticism; methods of adapting prose to film; and cultural influences of popular cinema.

Students can expect to be tested on their knowledge of film history and language, to read and write critical reviews, to research an aspect of film production, to compare print and film texts, and to demonstrate understanding of film language through a creative project.

In addition to the regular daytime schedule, the course scheduling requires students to be free twice a month on Tuesday evenings between 6:00 and 9:00 P.M. for film screenings.

SPRING SEMESTER SENIOR ENGLISH OFFERINGS

1352

The Idea of the Individual

Grade Level: Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50
Prerequisite: Literary Explorations II

The focus of this course is the individual: what is this being we call the individual? What is the self? What is the relationship of society, culture, and the self? Is there any such thing as a fully free individual? What forces threaten our individuality? These are just some of the many questions we will consider as we read works as diverse as Dostoevsky's Crime and Punishment, Joyce's Portrait of the Artist as a Young Man, Kafka's Metamorphosis, Shakespeare's King Lear, and a variety of poetry and short fiction, as well as supplemental selections from theologians, philosophers, psychologists and natural scientists. The whole notion of the self, from its roots in antiquity, to the revolution of evolution, to today's possibilities of genetic manipulation in human beings, certainly suggests that we need to consider this topic if we are to make meaningful, powerful choices about what we want to be, and can be, both for ourselves and in our relations with others.

1355

Topics in World Literature: Victorian Fiction

Grade Level: Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50
Prerequisite: Literary Explorations II

This course will focus specifically on Victorian fiction, literature written between 1837 and 1901. One of our main objectives will be to explore the parallels between Britain of the nineteenth century and America of the new millennium. Much like our society today, Britain during this time was a nation facing unprecedented economic and technological growth. Through the study of the novel and the short story, this course will examine the social, political, and cultural ideology of Britain during an era in which it rose to dominance as both a nation and an empire. Some of the issues we will investigate include the effects of the industrial revolution and urbanization, the implications of advances in science and technology such as the railroad and the telegraph, and the ethics of imperialism. We will look at works by Emily Brontë, Charles Dickens, George Eliot, and H. G. Wells, among others.

1364

Modern Irish Literature

Grade Level: Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50
Prerequisite: Literary Explorations II

Irish artists sing songs of rage and rapture that are a forming force in modern literature. In listening to them we engage with an often-comic cultural vision that is oddly energized by a fear of sex and a love of death. The course explores the fiction and poetry of seminal authors James Joyce and W.B. Yeats, and the drama of Synge and O'Casey. In addition we read, discuss and write about some of their descendents in contemporary Irish literature: fiction writers William Trevor, Edna O'Brien, Roddy Doyle; poets Seamus Heaney, Eavan Boland, Michael Longley; dramatists Brian Friel, Marina Carr and Martin McDonough. Students are provided with information about the historical scaffolding of Irish culture in order to develop an understanding of the transformative change in a society that has moved from enervating famine to the economic feasting of the "the Celtic tiger." Some of the resultant tensions are examined in class in the flowering of Irish film and Irish rock music in the 1990s. Written work ranges from short writes to full essay (including a departure essay, "Farewell to IMSA"), and there are opportunities for oral presentation and performance.

Grade Level: Senior

Length: One Semester (also offered in the Fall Semester as course #1345)

Credit: 0.50

Prerequisite: Literary Explorations II

In this class, students will study the following: the development of film as an art form and method of documentation; the language of film; a selection of influential American and international films and filmmakers; genres of film criticism; methods of adapting prose to film; and cultural influences of popular cinema.

Students can expect to be tested on their knowledge of film history and language, to read and write critical reviews, to research an aspect of film production, to compare print and film texts, and to demonstrate understanding of film language through a creative project.

In addition to the regular daytime schedule, the course scheduling requires students to be free twice a month on Tuesday evenings between 6:00 and 9:00 P.M. for film screenings.

HISTORY AND SOCIAL SCIENCE

1410 American Studies

Grade Level: Sophomore
Length: Two Semesters
Credit: 0.50 per Semester
Prerequisite: None

The American Studies survey serves a dual function at the Academy. Through a rigorous curriculum, it introduces students to college-level reading, research, and writing skills. Through compelling historical content, it seeks to foster such values as citizenship, patriotism, and stewardship. American history is an unfinished drama, an experiment unlike any that has come before. Through the use of primary documents, quantitative data, and narrative, the course seeks to enlist the students into that experiment by showing them its origins and challenging them to carry it forward into their own time.

1421 Topics in World Studies

Grade Level: Junior
Length: Two Semesters
Credit: 0.50 per Semester
Prerequisite: American Studies

Modern culture, society and politics have assumed an increasingly global character, and this course examines the world's history and the major issues confronting its people. Selected topics include ideologies, political events, social trends, economic systems, and creative expressions drawn from major world cultures. Integrative thinking, critical analysis, research skills, and ethical awareness all play a role in students' exploration of the human past.

1431 International Relations

Grade Level: Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Topics in World Studies

Nation-states play a "Great Game," to use Kipling's expression, sometimes cordial, sometimes deadly. This course will explore that game, its spirit, and its players, in the context of historical and contemporary events. Students will confront diplomatic problems through source analysis and simulation, and they will have the opportunity to attempt to resolve some of the world's most pressing problems. The course places special emphasis on the truly global issues that transcend the interests of any single state.

1432 Explorations in Psychology

Grade Level: Senior Only
Length: One Semester (**offered Spring semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Topics in World Studies

Psychology is the scientific study of human and animal and mental states and processes. Psychologists organize and investigate information regarding subjects related to individuals, groups, and cultures. This course will survey such topics as biology of behavior, personality, learning, memory, perception, identity development, and the history of psychology. Students will be challenged to apply psychological theories and constructs in understanding the interaction of cognitive processes and behaviors. Please note that this course will be assessed on a new competency-based grading system.

Macroeconomics

Grade Level: Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Topics in 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 that 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 that should give their newly acquired knowledge of macroeconomics concepts certain immediacy.

Microeconomics

Grade Level: Senior
 Length: One Semester (**offered Spring Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Topics in 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 that 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 that should give their newly acquired knowledge of microeconomics concepts certain immediacy.

Topics in Recent United States History

Grade Level: Senior
 Length: One Semester (**offered Spring Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Topics in 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 interdisciplinary perspective incorporating Science, Literature, Political Science, International Relations, Sociology, Economics, and Art and Music.

European History

Grade Level: Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisites: Topics in 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 bittersweet joy. The course will explore several dimensions of the birth, and development of the modern 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.

1439

Political Theory

Grade Level: Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisites: Topics in World Studies

Political Theory will survey the most significant theoretical and philosophical contributions made to Western political thought starting with the Classical Greeks. Students will be required to understand and speak of the formulation of ideas, as they concern society and politics, over the past 3,000 years. In doing so the student can see the continuities and failures in the Western effort to balance the need for security with a desire for political and individual freedoms. The introduction to these specific political theories will also potentiate the student's experience and knowledge gained in the American and World Studies courses. Students will accomplish this by reading excerpts from the actual writers, looking at the historical background, and through extensive class discussion.

1441

Science, Society, and the Future (History and Social Science Credit)

Grade Level: Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 (**History/Social Science**) Pass/Fail option
 Prerequisite: Topics in American Studies and World Studies and Scientific Inquiries or the Core Science Program or equivalent

The focus of this course is on issues where science and technology interact with human health and welfare. The students are expected to address real world issues in realistic problem-based learning scenarios. Each semester has between 2 and 4 "problems" that are to be addressed by the students. The problems fit under a conceptual umbrella that connect them in some way. For example the conceptual umbrella for Fall of 2004 was: Environmental regulations, are the benefits worth the costs? The overall goal of the course is to have students bring all they have learned of science, analysis, and ethics to bear on a current problem of significance.

1445

Mind and Cosmos: A Cultural History of Astronomy

Grade Level: Senior
 Length: One Semester (**offered Fall Semester only**)
 Credit: 0.50 Pass/Fail option
 Prerequisite: Topics in World Studies

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, and 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 and cosmological thought; the

analysis of different approaches to truth, certainty and method; the interactions between astronomy, physics, and mathematics; and the relationship of astronomy and physics to religion and philosophy. We will trace these themes from Greek antiquity to the Newtonian universe of the Enlightenment and beyond.

This course will be linked with the Science Team's Observational Astronomy. Students registering for both courses will have the option of pursuing a number of interdisciplinary experiences throughout the semester.

1446 Genesis Rewritten: A Cultural History of Biology and Natural History

Grade Level: Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Topics in World Studies

This course will trace the varied attempts to explain the living world over the two thousand years from ancient Greece to twentieth century America. We will examine numerous religious, philosophical and scientific approaches to the questions of life and the complex 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 nature (and ourselves). We will explore the human drive to order the living world, and we will consider the effect of recent notions of dinosaur paleontology and asteroid impact on such systems of order and classification. Finally, we will consider the changing attitudes of humanity towards nature and the environment, from the ancient notion of nature as dark and chaotic to the growth of modern notions of ecology.

1448 Explorations in Latin America

Grade level: Senior
Length; One semester (**offered Spring Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Topics in World Studies

Latin America is a region of variegated lands and peoples, and a comprehensive history of the entire region is impossible in a semester-long course. For that reason this course will vary topically every time it is offered but certain big themes are constant. These themes include the impact of geography on indigenous cultures and civilizations as well as the transplanted European and African ones; the struggle between elites and popular forces for revolutionary change; stresses between traditional and modern ways of life; and oscillation between authoritarianism and liberal principles in government and society. This course will rely on an interdisciplinary, integrative approach via history, historical anthropology, political science, international relations, economics, and Latin American arts and letters to examine these issues. It will require students to master the broad framework of Latin American history while going deeper into a problem or subject of individual interest that has connections to current Latin American affairs.

1450 The Second World War and the Cold War, 1937-1991

Grade Level: Senior
Length: One semester (**offered Spring Semester only**)
Credit: 0.50 Pass/Fail option
Prerequisite: Topics in World Studies

The Second World War (1937-1945) and the immediately following Cold War (1945-1991) have critically shaped the way our modern world works. Both conflicts were truly world ranging, and touched the lives of everyone on the globe. However, the Second World War has fallen prey to numerous myths and misconceptions, while the Cold War remains relatively unknown – except as a political-academic issue. The goal of this course is to facilitate the student's knowledge of the many events and ideologies that struggled across the globe for over 50 years. Much of the material covered will also potentiate the student's experience and knowledge gained in American and World Studies. Students will accomplish this by reading excerpts from the actual writers, looking at the historical context, and through extensive class discussion and debate. Knowledge gained in this course will enable the student to be an effective and intelligent participant in present political and historical discourse.

WORLD LANGUAGES

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.**

In this course, students begin to develop proficiency in listening, speaking, reading, and writing. Topics revolve around the students' immediate world, including self, family, friends, school and home communities, interests, food, professions, health, transportation, holidays, seasons, and clothes. Students build good pronunciation and listening skills, and read simple authentic texts. In addition this course seeks to develop and enhance an understanding of the diverse cultures of the francophone world.

1512 French II

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: French I and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

Students build upon the skills developed in French I (with appropriate review of previously learned material). They develop greater proficiency in listening, speaking, reading, and writing. The topical context is expanded from the students' immediate world to the world of the target cultures. Topics may include shopping, cuisine, geography, travel, wellness, leisure time activities, and careers. Students will be required to write compositions on a regular basis.

1513 French III

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: French II and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

In Level III, students continue to build communication skills developed in Levels I and II. Specifically, students participate actively in extended oral and written discourse, using compound and complex sentences to provide information in a coherent and fluent manner. Students narrate and describe past and present events; they predict future events. They develop critiquing skills. Students explore options in a given situation, and handle difficulties and unexpected events. They also learn to initiate and sustain a conversation, discussion, or debate. Students demonstrate these language functions in various contexts (personal, social, political, socio-economic, scientific, literary, artistic, historical and philosophical). Students keep a journal throughout the school year as a reflective process and assessment tool. During second semester students examine the social, psychological, and cultural implications of fairy tales. Reading selections include three famous French novels: Le Petit Nicolas, La Belle et la Bête, and Le Petit Prince.

1514 French IV

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: French III and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

1515 French V

Grade Level: Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: French IV and recommendation of Instructor

Students of French IV and V are in the same class and follow the same curriculum for the academic year. The curriculum is a two-year cycle, alternating every other year. The first quarter of each year is devoted to an in-depth grammar review, and new grammatical structures will be introduced and reviewed throughout the year. Students read authentic texts that include advanced grammatical structures (i.e. passive voice, subjunctive and conditional moods, indirect discourse), and topics that are technical, scientific, philosophical, and literary.

Learning experience designs for French IV and French V include:

Slice of Time--an interdisciplinary approach to the study of a selected period of history, beginning with a piece of literature, a film, a historical period, a philosophical movement, or an art movement, etc. as a focal point. Examples of learning experiences are: Life in the Middle Ages and Renaissance; French Presence in Indochina; French Presence in Africa; Questions of the Individual, Identity, and Existentialism; Questions of Religion, War and Death, and the Loss of Innocence; etc.

Visual Thinking--based on the belief that art is essential to people's lives and is an invaluable tool in education. This study of art involves careful observation and analysis, encourages deductive reasoning, as well as speculation about possible meaning. It also requires both interpretation and judgment (adapted from material written by Amelia Arenas, Abigail Housen, and Philip Yenawine for the Museum of Modern Art's Education Department).

Le Septième Art—French cinéma is appreciated and renowned throughout the world. Within France, cinema is held in such high esteem that it has been called “The Seventh Art”. Students will explore a particular theme as it is developed through film. Film selections may include classics, and more recent productions, as well as films from francophone countries beyond France. Examples of themes: Revolution; and, Liberty, Equality, and Fraternity.

Current Events - Newsworthy events regarding France, the francophone world, the European Union, and the United States will be discussed as they present themselves throughout the year. The instructor will present topics for discussion and students are encouraged to do so as well. Every effort will be made to find readings in French about current events, but some may be in English.

Level IV students continue to build on the skills from the first three levels of their study of French by developing and refining the five major skills of listening, speaking, reading, writing, and cultural competency. As the year progresses, students' written and oral French is expected to reflect advanced grammatical structures and an ever-expanding, sophisticated, precise, and eloquent vocabulary. Students become more adept at comprehending the speech of native speakers, speaking at a normal rate of speed, in most situations.

Expectations for performance and progress are higher for French V students. Students at level V of French continue to build on the five skills. Due to their experience with and exposure to the language and francophone cultures, they are expected to access and demonstrate greater mastery of the grammar and vocabulary in their written and oral communication. As the year progresses, students will be expected to demonstrate increasingly effective communication through the creative use of vocabulary in context, and grammatical and syntactical accuracy. For example, their written French will demonstrate increasing fluency, more concise expression when necessary, and greater control of the mechanics of the written and spoken language. Spoken French will reflect more accurate pronunciation, increasing fluency, and authentic French intonation.

1522

Spanish II

Grade Level:	Sophomore/Junior/Senior
Length:	One Year
Credit:	1.0 per Year Pass/Fail option
Prerequisite:	Spanish I and recommendation of Instructor or Proficiency Exam and recommendation of Instructor

Students build upon the skills developed in Spanish I (with appropriate review of previously learned material). They develop greater proficiency in listening, speaking, reading, and writing. The topical context is expanded from the students' immediate world to the world of the target cultures. Topics may include shopping, cuisine, geography, travel, education, wellness, leisure time activities, careers, and the 21st century. Students will also keep a journal to improve their writing.

Spanish III

Grade Level:	Sophomore/Junior/Senior
Length:	One Year
Credit:	1.0 per Year Pass/Fail option
Prerequisite:	Spanish II and recommendation of Instructor or Proficiency Exam and recommendation of Instructor

In Level III, students continue to build communication skills developed in Levels I and II. Specifically, students participate actively in extended oral and written discourse, using compound and complex sentences to provide information in a coherent and fluent manner. Students narrate and describe past and present events; they predict future events. They develop critiquing skills. Students explore options in a given situation, and handle difficulties and unexpected events. They also learn to initiate and sustain a conversation, discussion, or debate. Students demonstrate these language functions in various contexts (personal, social, political, socio-economic, scientific, literary, artistic, historical and philosophical). Students keep a journal throughout the school year as a reflective process and assessment tool. Some of the topics covered in Spanish III are music, death, family, friendship and love, politics, environment, and poetry.

Spanish IV

Grade Level:	Sophomore/Junior/Senior
Length:	One Year
Credit:	1.0 per Year Pass/Fail option
Prerequisite:	Spanish III and recommendation of Instructor or Proficiency Exam and recommendation of Instructor

In Level IV students continue to develop and refine the major skills of listening, speaking, reading and writing. They read and comprehend authentic texts that include advanced grammatical structures (i.e. passive voice, subjunctive and conditional moods, indirect discourse), and topics that are technical, scientific, philosophical and literary. Students' writing and speaking also reflect advanced grammatical structures and an ever-expanding, sophisticated, and eloquent vocabulary. Students become more adept at comprehending the speech of native speakers, speaking at a normal rate of speed, in most situations.

Learning experience designs include:

Slice of Time--an interdisciplinary approach to the study of a selected period of history, beginning with a piece of literature, a film, a historical period, a philosophical movement, or an art movement, etc. as a focal point. Some recent learning experiences have been: Medieval Spanish Literature, The Origins of the Spanish Language, Surrealist Spanish Painting, Revolutionary Movements in Twentieth Century Latin American, and Immigration: Myths and Reality.

Visual Thinking--based on the belief that art is essential to people's lives and is an invaluable tool in education. This study of art involves careful observation and analysis, encourages deductive reasoning, as well as speculation about possible meaning. It also requires both interpretation and judgment (adapted from material written by Amelia Arenas, Abigail Housen, and Philip Yenawine for the Museum of Modern Art's Education Department).

Science and Ethics--designed so that students can examine a scientific problem that affects individuals and society as a whole. The choice of "problem" may vary from year to year; however, the problem must reflect an ethical dilemma. Examples of topics are: the pros and cons of nuclear energy, the effects of oil spills, genetics engineering, euthanasia, forestry management, use/misuse of the information superhighway, the political role of environmental groups, the responsibility of the scientist in society, etc.

1525 Spanish V

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: Spanish IV and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

In Level V, students build on the skills developed in previous years of study in order to enhance all aspects of communicative and cultural competency. The goal is to acquire greater proficiency in conversation, reading, writing, and listening comprehension. There is an in-depth review of grammar. Throughout the course, we examine aspects of Spanish culture and civilization through the study of history, literature, art and cinema.

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.**

In this course, students begin to develop proficiency in listening, speaking, reading, and writing. Topics revolve around the students' immediate world, including self, family, friends, school and home communities, interests, food, health, holidays, and clothes. Students build good pronunciation and listening skills, and read simple texts. In addition this course seeks to develop and enhance an understanding of the diverse cultures of the German-speaking world.

1532 German II

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: German I and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

Students build upon the skills developed in German I (with appropriate review of previously learned material). They develop greater proficiency in listening, speaking, reading, and writing. The topical context is expanded from the students' immediate world to the world of the target cultures. Topics may include shopping, cuisine, geography, travel, wellness, leisure time activities, and careers.

1533 German III

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per year Pass/Fail option
Prerequisite: German II and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

In Level III, students continue to build communication skills developed in Levels I and II. Specifically, students participate actively in extended oral and written discourse, using compound and complex sentences to provide information in a coherent and fluent manner. Students narrate and describe past and present events; they predict future events. They develop critiquing skills. Students explore options in a given situation, and handle difficulties and unexpected events. They also learn to initiate and sustain a conversation, discussion, or debate. Students demonstrate these language functions in various contexts (personal, social, political, socioeconomic, scientific, literary, artistic, historical and philosophical). Each semester students will be expected to complete a project that requires them to gather and process information in the target language. Students may be asked to keep a journal throughout the school year as a reflective process and assessment tool. They will read selected authentic texts (fiction and non-fiction) that will provide the impetus for discussions. Typical topics for German III include: Germany in the Middle Ages, The Age of Goethe, Environmental Issues, Contemporary Sociological Issues, From Aachen to Zwickau: Germany's Urban Landscape, Germany's Pop Culture, A Philatelist's Tour Through German Culture and History.

1534 German IV

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: German III and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

1535 German V

Grade Level: Sophomore/Junior/Senior
Length: One Year
Credit: 1.0 per Year Pass/Fail option
Prerequisite: German IV and recommendation of Instructor

In Levels IV and V students continue to develop and refine the major skills of listening, speaking, reading and writing. They read and comprehend authentic texts that include advanced grammatical structures (i.e. passive voice, subjunctive and conditional moods, indirect discourse), and topics that are technical, scientific, philosophical and literary. Students' writing and speaking also reflect advanced grammatical structures and an ever-expanding, sophisticated, and eloquent vocabulary. Students become more adept at comprehending the speech of native speakers, speaking at a normal rate of speed, in most situations.

Learning experiences include: Slice of Time--an interdisciplinary approach to the study of a selected period of history, beginning with a piece of literature, a film, a historical period, a philosophical movement, or an art movement, etc. as a focal point. Some recent learning experiences have been: The Weimar Republic, literary selections such as Deutschstunde and Der Richter und Sein Henker, 40 Year DDR / BRD and Politics and Contemporary Germany. Other topics include:

Visual Thinking--based on the belief that art is essential to people's lives and is an invaluable tool in education. This study of art involves careful observation and analysis, encourages deductive reasoning, as well as speculation about possible meaning.

Science and Ethics--designed so that students can examine a scientific problem that affects individuals and society as a whole. The choice of "problem" may vary from year to year; however, the problem must reflect an ethical dilemma. Examples of topics are: the pros and cons of nuclear energy, the effects of oil spills, genetics engineering, euthanasia, forestry management, use/misuse of the information superhighway, the political role of environmental groups, the responsibility of the scientist in society, etc.

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.**

In this course, students begin to develop proficiency in listening, speaking, reading, and writing. Topics revolve around the students' immediate world, and include self, family, friends, school and home communities, interests, food, transportation, holidays, seasons, and clothes. Students build good pronunciation and listening skills, and learn to read and write in both katakana and hiragana (phonetic writing systems) and a small number of kanji/Chinese characters. In addition this course seeks to develop and enhance an understanding of Japanese culture.

1542 Japanese II

Grade Level: Sophomore/Junior/Senior
 Length: One Year
 Credit: 1.0 per Year Pass/Fail option
 Prerequisite: Japanese I and recommendation of Instructor

Students build upon the skills developed in Japanese I (with appropriate review of previously learned material). They develop greater proficiency in listening, speaking, reading, and writing. The topical context is expanded from the students' immediate world to the world of the target culture. Topics may include shopping, cuisine, geography, travel, education, wellness, leisure time activities, careers, and the 21st century. Students will continue to develop their hiragana and katakana writing skills, and will learn more kanji.

1543 Japanese III

Grade Level: Sophomore/Junior/Senior
 Length: One Year
 Credit: 1.0 per year Pass/Fail option
 Prerequisite: Japanese II and recommendation of Instructor

The overall theme for Level III is "Living in Japan". Students imagine going to Japan as part of an exchange program, and within that context, they develop practical, real-world skills that they would need if they were to travel to Japan and live with a host family. They also learn more about the Japanese lifestyle and culture so that they can interact and speak appropriately with Japanese people. Level III continues the patterns established at Levels I and II. The main emphasis is still on spoken communication and communicative competency; however, students will be expected to do more reading and writing than at Level II. Furthermore, students will tackle some challenging ideas and grammatical structures, including the passive construction (which is significantly different from passive in English), the verbs of giving and receiving (which reveal much about Japanese society and mindset), and provisional, conditional, and potential tenses.

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.**

In this course, students are expected to master the Cyrillic alphabet in order to develop proficiency in listening, speaking, reading, and writing. Students are expected to master Russian penmanship. Topics revolve around the students' immediate world, including self, family, friends, home communities, interests, food, professions, health, transportation, holidays, and seasons. In addition this course seeks to develop and enhance an understanding of Russian culture.

1552 Russian II

Grade Level: Sophomore/Junior/Senior
 Length: One Year
 Credit: 1.0 per Year Pass/Fail option
 Prerequisite: Russian I and recommendation of Instructor **or** Proficiency Exam and recommendation of Instructor

Students build upon the skills developed in Russian I (with appropriate review of previously learned material). They develop greater proficiency in listening, speaking, reading, and writing. The topical context is expanded from the students' immediate world to the world of the target cultures. Topics include cuisine, geography, education, seasons and holidays, family, and character traits. Students build good pronunciation and listening skills, and read simple authentic texts. Russian II students are required to keep a diary throughout the school year.

Russian III

Grade Level:	Sophomore/Junior/Senior
Length:	One Year
Credit:	1.0 per Year Pass/Fail option
Prerequisite:	Russian II and recommendation of Instructor or Proficiency Exam and recommendation of Instructor

In Level III students continue to build communication skills developed in Levels I and II. Students are expected to regularly demonstrate and improve the following language skills: participate actively in class conversations, discussions, and debates; use compound and complex sentences to provide information in a coherent and fluent manner; develop critiquing skills. Students will continue to regularly write in journals for the purpose of mastering reflective thinking skills and grammatical accuracy.

Reading authentic Russian literary texts is at the foundation of the Russian III curriculum. Russian III students will read short stories by Aleksander Pushkin and Anton Chekhov, as well as a selection of Russian fairytales, and poetry by various 19th and 20th century Russian poets. In order to develop better reading skills, students will read abstracts and short articles from Russian newspapers and learn to summarize their content. Written assessments will include short writes, quizzes, and longer essays. Oral performance will be assessed by means of class contributions and in-class presentations

FINE AND PERFORMING ARTS

1600(F) Symphonic Band
1601(S)

Grade Level: Sophomore/Junior/Senior
Length: One – Two Semester(s)
Credit: 0.50 – 1.0 Pass/Fail option
Prerequisite: Instructor's approval, based on student audition

Students enrolled in Symphonic Band will have opportunities to study, rehearse, and perform various styles of Concert Band literature at the high school music grade 4 and 5 levels. Students will perform several formal concerts, as well as participate in the IHSA Solo & Ensemble and Organizational Contests. Students may also audition for participation in the IMEA District IX Band or Orchestra and possible participation in All-State. Principal chairs will have added responsibility of performing Orchestra.

1604(F) Symphony Orchestra
1605(S)

Grade Level: Sophomore/Junior/Senior
Length: One – Two Semester(s)
Credit: 0.50 – 1.0 Pass/Fail option
Prerequisite: Orchestra string instrument skills at or beyond the high school sophomore level.

Students enrolled in Symphony Orchestra will have the opportunities to study, rehearse, and perform various styles of string and full orchestra music in large and small ensembles at the high school music grade 3, 4, and 5 levels. Literature will be selected to meet the abilities and interests of the individual student while also addressing the goals of the large ensemble. In recent years, the Symphony Orchestra has performed music of Johann Sebastian Bach, Georg Fredrich Handel, Ludwig von Beethoven, Wolfgang Amadeus Mozart, and Mikail Glinka. Students will perform in several formal concerts and chamber music events throughout the year. On an individual basis, students may audition for the IMSA Strolling Strings, the IMEA IX District Band and the Fox Valley High School Music Festival, and perform at the IHSA Solo & Ensemble festival. For additional information, please visit the IMSA Fine Arts Website.

1610(F) Concert Choir
1611(S)

Grade Level: Sophomore/Junior/Senior
Length: One – Two Semester(s)
Credit: 0.50 – 1.0 Pass/Fail option
Prerequisite: First Semester: Basic level ability of matching pitches
Second Semester: Satisfactory completion of one semester of Concert Choir or Chamber Choir or permission of instructor based on student's successful audition.

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 group 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: 0.50 – 1.0 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. Both semesters provide opportunities for solo, small and large ensemble singing through many diverse performing venues. Emphasis however, is on Renaissance and a cappella music culminating in a series of madrigal concerts. 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.)

1621 Music Theory

Grade Level: Sophomore/Junior/Senior
Length: One Semester [**Semester(s) offered based on student interest**]
Credit: 0.50 Pass/Fail option
Prerequisite: A solid music foundation such as piano, chorus, band, orchestra

Music Theory is open to any student with a solid music background interested in learning the principles of writing and analyzing music. Students will learn the elements of music theory, including intervals, chord progressions, harmony, transposition, voicing, arranging and ear training. Final project will be arrangement and writing of a composition for full orchestra or concert band.

1630 Art Design

Grade Level: Sophomore/Junior/Senior
Length: One Semester (**offered Spring Semester only**)
Credit: 0.50 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 (**offered both Fall and Spring Semesters**)
Credit: 0.50 Pass/Fail option
Prerequisite: None

This course will provide students with the opportunity to explore methods of working with clay including hand building and throwing on the potter's wheel. Students will solve design problems in clay by considering aesthetic, historical, and technical processes related to ceramics. Students will have the opportunity to investigate traditional as well as new advances in technology with 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 (**offered both Fall and Spring Semesters**)
Credit: 0.50 Pass/Fail option
Prerequisite: None

This course will provide students with the opportunity to obtain a general overview of the uses for 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, 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.**

1634

Advanced Ceramics

Grade Level: Junior/Senior
Length: One Semester (**offered both Fall and Spring Semesters**)
Credit: 0.50 Pass/Fail option
Prerequisite: Ceramics and recommendation of Instructor

This course will provide students who have proven themselves proficient in basic Ceramics, an opportunity to perfect basic skills, explore advanced techniques, and express their interests and creativity through individualized projects. Students in Advanced Ceramics will attend class with Ceramics students, but will be given individualized instruction appropriate to their skill level.

WELLNESS

1714

Moving and Learning

Grade Level: Sophomore
Length: One Semester (**offered both Fall and Spring Semesters**)
Credit: 0.0 Pass/Fail Only
Prerequisite: None

This required semester-long sophomore course is designed to develop physically educated individuals who have the knowledge, skills, and confidence to enjoy a lifetime of healthful physical activity. It is an activity-based course that emphasizes the physical dimension of wellness through concepts and principles of motor learning, motor development, biomechanics, and health-related physical fitness. Learning experiences will focus on motor skill development for a variety of physical activities, conceptual understanding of how to get better at motor performance and physical fitness, and the importance of nutrition, sleep, and stress management to overall fitness.

Wellness Electives

Grade Level: Sophomore/Junior/Senior
Length: One semester
Credit: 0.0 Pass/Fail Only
Prerequisite: Wellness

All students will select an activity course that 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. Wellness elective courses are listed below.

FALL SEMESTER WELLNESS ELECTIVES

1716

Tennis and Badminton

Students will participate in an individualized instruction program which will allow them to begin at their own skill level and progress at their own pace. Skill-related fitness will be emphasized as students practice proper form and technique. The basic rules, strategies, and etiquette of tennis will be discussed and implemented.

Students will participate in drills and game-like activities involving singles and doubles. Students will learn the basic skills, strategies, and techniques of formal badminton play for singles and doubles. Skill-related components of physical fitness such as coordination, agility, and reaction time will be developed.

1719

Beginning Rollerblading and Indoor Games

In Beginning Rollerblading, students will develop agility, balance, coordination and speed as they learn to roll, stride, stop, turn, and fall. Students will participate in progressively longer skates; skate through obstacle courses, and at a local skate park.

The quarter-long Indoor Games course is a Wellness Elective that is comprised of multiple motor skills to produce further development and success in games and sports. Students will actively participate in athletic opportunities and leisure-time activities to build on the skill and health-related fitness experiences introduced in the sophomore curriculum. Activities will include pickleball, floor hockey, multicultural games and team building challenges. The emphasis of skills is placed on how they can be used in real play, real life, and real environments. Multicultural outcomes aimed at positive group interaction, collective achievement, culture, change, conflict resolution, cooperation, empathy and tolerance will guide course objectives so that all students can achieve success as physically educated learners in a group situation.

Golf and Indoor Games

Golf is part of the wellness required elective program at IMSA that allows students to explore a variety of physical activities and sports in depth. It is a quarter long class that is designed to help students develop the skills necessary to play the game of golf. It includes an understanding of the history, rules, etiquette, strategies, and the social, emotional, and physical values of the game. Students experience practice and play at a driving range as well as at actual golf courses.

The quarter-long Indoor Games course is a Wellness Elective that is comprised of multiple motor skills to produce further development and success in games and sports. Students will actively participate in athletic opportunities and leisure-time activities to build on the skill and health-related fitness experiences introduced in the sophomore curriculum. Activities will include pickleball, floor hockey, multicultural games and team building challenges. The emphasis of skills is placed on how they can be used in real play, real life, and real environments. Multicultural outcomes aimed at positive group interaction, collective achievement, culture, change, conflict resolution, cooperation, empathy and tolerance will guide course objectives so that all students can achieve success as physically educated learners in a group situation.

Bowling and Fencing

The quarter-long Fencing elective includes a historical and cultural overview; basic skills and techniques of foil fencing; rules, strategies, and etiquette of bouting; care and selection of equipment; personal safety procedures; and officiating practices. Students will have opportunities to participate in tournament competition using manual scoring techniques.

The quarter-long Bowling elective includes a historical and cultural overview; basic skills, techniques, and strategies; care and selection of equipment; and personal safety procedures and practices. Most of the instruction will take place off-campus at a local bowling facility and a bowling fee is required. This class will provide an authentic experience for students to explore the recreational and social values of bowling. Students will also research bowling opportunities in their home communities.

Lifeguarding and Water Polo

Basic rules, techniques, and strategies of water polo will be discussed, demonstrated, and implemented in game situations. Olympic water polo videos will be shown. Ability to swim one length of the pool (25 yards) and tread water for at least two minutes is required.

The lifeguarding class is a certification program through the American Red Cross for those students at least 15 years of age on or before the last scheduled session, and wishing to be lifeguards at summer pools, or at IMSA for work service. There are two swimming pre-requisites for this course which all students must successfully complete the first class session. They are:

1. Swim 500 yards continuously using breaststroke and front crawl (200 yards front crawl, 100 yards breaststroke, 200 yards front crawl-breaststroke combo).
2. Swim 20 yards using front crawl or breaststroke, surface dive to a depth of 7-10 feet, retrieve a 10 pound object, return to the surface, and swim 20 yards back to the starting point with the object held in both hands and the face above water.

There are two certifications earned with the successful completion of this course: Lifeguard Training and First Aid (valid for three years), and CPR for the Professional Rescuer (valid for one year). A \$14.50 Lab Fee is required for the CPR portion of this class.

Outdoor and Indoor Games

The Indoor and Outdoor Games course is a semester-long Wellness Elective that is comprised of multiple motor skills to produce further development and success in games and sports. Students will actively participate in athletic opportunities and leisure-time activities to build on the skill and health-related fitness experiences introduced in the sophomore curriculum. Activities will include field sports such as speedball, speed-a-way, flag football, ultimate Frisbee, disc golf, as well as pickleball, floor hockey, multicultural games and team building challenges. The emphasis of skills is placed on how they can be used in real play, real life, and real environments. Multicultural outcomes aimed at positive group interaction, collective achievement, culture, change, conflict resolution, cooperation, empathy and tolerance will guide course objectives so that all students can achieve success as physically educated learners in a group situation.

SPRING SEMESTER WELLNESS ELECTIVES

- 1724 **Bowling and Fencing**
The quarter-long Fencing elective includes a historical and cultural overview; basic skills and techniques of foil fencing; rules, strategies, and etiquette of bowling; care and selection of equipment; personal safety procedures; and officiating practices. Students will have opportunities to participate in tournament competition using manual scoring techniques.
- The quarter-long Bowling elective includes a historical and cultural overview; basic skills, techniques, and strategies; care and selection of equipment; and personal safety procedures and practices. Most of the instruction will take place off-campus at a local bowling facility and a bowling fee is required. This class will provide an authentic experience for students to explore the recreational and social values of bowling. Students will also research bowling opportunities in their home communities.
- 1726 **Beginning and Intermediate Swimming**
For students who would like to learn to swim better but need one on one attention to progress beyond non-swimmer status. Starting with basic floats and glides, the student will progress to elementary backstroke and crawl stroke during beginning swimming and will learn sidestroke, backstroke, and breaststroke during the intermediate level. In addition, the swimmer's ability to swim farther continuously will be improved with the idea of using swimming as a fitness activity.
- 1731 **Dance: Ballroom and Multicultural**
Ballroom dance will include the basic steps of waltz, fox trot, swing, cha cha, polka, tango, and Latin dances. Good leading and following techniques as well as style will be emphasized. Students will have the opportunity to dance set combinations of steps as well as create their own during class.
- The Multicultural portion of class is a beginning level that will engage students in dances from various countries. Circle, partner, and mixers danced to traditional music will enable participants to cross cultures and learn through this fun, active, nonverbal language of dance. Student will be expected to give an oral presentation and write reflectively.
- 1732 **Badminton and Tennis**
Students will be introduced to the competitive challenges and fun of formal badminton and tennis as they participate in singles and doubles play in this Wellness elective. Skill-related components of physical fitness such as coordination, agility, and reaction time will be developed as well as the health-related components of muscular endurance, flexibility, and cardiovascular endurance. Instruction will include individual, partner, small group, and large group activities to ensure multiple pathways to skill development. Students will be expected to demonstrate appropriate use of skills, strategies, and rules for each activity.
- 1734 **Basketball and Soccer**
Basketball is part of the wellness required elective program at IMSA that allows students to explore a variety of physical activities and sports in depth. It is a quarter long class that is designed to help students develop the skills necessary to play the game of basketball, and includes an understanding of the history, rules, strategies, and skill techniques for all aspects of the game. In addition, the social, emotional, and physical values of the game are explored. Students experience skill drill work and half and full court game play throughout the course.
- Soccer, the world's number one sport, is part of the wellness required elective program at IMSA that allows students to explore a variety of physical activities and sports in depth. It is a quarter long class, and is paired with basketball because it gives students the opportunity to develop eye-hand and eye-foot coordination in the same semester by engaging in two fast-moving sports which are also excellent for developing cardiovascular endurance. This quarter-long course is designed to help students develop the skills necessary to play the game of soccer, and includes an understanding of the history, rules, skill techniques, and strategies for all aspects of the game. In addition, the social, emotional, and physical values of the game are explored. Students experience skill drill work, skill assessments, modified soccer games, and full-length field soccer games throughout the course.

Current Issues in Adolescent Wellness and Volleyball

The Wellness Elective: Current Issues in Adolescent Wellness is designed to provide problem-centered learning experiences that allow students to apply the skills of information analysis, organization, comparison, synthesis, and evaluation to current issues in adolescent wellness. It will provide a foundation for students to move toward becoming health literate, responsible, and productive citizens. Students will choose from a variety of problem-centered case studies, conduct inquiry and research, develop a problem statement, generate a solution, and present their findings using instructional technology.

The quarter-long Volleyball Elective offers an opportunity for students to develop the basic skills and tactics for participation in recreational volleyball. Students will participate in drills, lead-up games, and competitive play designed for fun, fitness, and motor skill development.

STUDENT INQUIRY AND RESEARCH

Student Inquiry and Research offers three different learning opportunities: **Student Inquiry**, **Student Mentorship**, and **TALENT (Total Applied Learning for Entrepreneurs)**.

Each learning opportunity has the same three general components: *investigation*, *sharing results*, and *assessment*. Successful completion of a project within a particular learning opportunity involves completing all steps required for that opportunity. In addition, specific goals established by the student with adult guidance must also be completed.

Sharing Results

Near the end of each academic year, all Student Inquiry and Research participants finalize their projects and prepare to share their work and results at IMSA's Annual Presentation Day. Presenters write an abstract of their work for inclusion in a booklet that is distributed to invited guests, IMSA faculty and staff, project advisors and mentors, and other students; the booklet is used to assist participants in selecting presentations to attend. Abstracts of projects are archived subsequently by subject matter for ease of access. Students are also encouraged to share their work and results with relevant organizations outside of the Illinois Mathematics and Science Academy when the project has reached an appropriate state of maturity. There are many outstanding additional opportunities to leverage project experiences and results, and IMSA students have reached significant external achievements with them.

Assessment

Upon completion of the project, an assessment of the student's work is made by the student's advisor or mentor to determine if the project goals were fully met. After this assessment, determination of final Inquiry project status is made by the project advisor, in consultation with the Coordinator of Student Inquiry. Determination of final Mentorship project status is made by the Coordinator of Student Mentorship. Completion status of the Student Inquiry and Research Project is documented on the student's transcript as either *completed* or *failed* on the student's year-end transcript.

STUDENT INQUIRY

Student Inquiry is a student-directed in-depth study of a topic reflecting the student's interests, guided by an experienced IMSA staff or faculty member who serves as the Project Advisor.

Senior Research

Good research leads to more opportunities for research. The basis for Senior Research is a successful Inquiry project that has continued into its second year.

Senior Research counts as 0.5 credits and receives a grade of pass or fail. Students may register for Senior Research at the end of the Junior year with the approval of the Inquiry Advisor and the Student Inquiry coordinator. Senior Research does not count toward the minimum course requirements for graduation. Maximum course credits apply, as stated in the student handbook.

Dr. Judith Scheppeler is the overall Coordinator for the Student Inquiry Program; she can be reached via email at quella@imsa.edu, by phone at (630) 907-5899, or at her desk in the Grainger Center for Imagination and Inquiry, B131.

MENTORSHIP

Student Mentorship is a mentor-guided partnership wherein the student actively engages in the ongoing work of a professional in a laboratory, museum, field, corporate, or educational institution setting. This professional, a scientist or scholar, serves as the Project Mentor.

Dr. Peggy Connolly is the overall Coordinator for the Student Mentorship Program; she can be reached by phone at (630) 907-5985, or at her desk in the Mentorship Office, B131C.

TALENT

TALENT will provide on-campus, off-campus and virtual learning experiences and resources to encourage, stimulate, and champion entrepreneurial applied science and technology projects.

Mr. Nick Scholtes is the TALENT Program Director . He can be reached via email at nscholte@imsa.edu, by telephone at (630) 907-5949, or at his office in B104A.

Independent Study

Independent Study is a student-selected learning experience that goes beyond the IMSA course catalog. Unlike Student Inquiry, Independent Study lacks a focusing question and is driven by a curriculum that is largely teacher-directed. Except with the Principal's permission, an Independent Study may only be conducted by a senior under the direction of an IMSA faculty member for one or two semesters. A proposal for an Independent Study, consisting of a learning contract must be submitted to the Curriculum and Assessment Leadership Team by the faculty advisor and student no later than the last class day of the third quarter in the student's junior year. An Independent Study counts as 0.5 credits each semester in a student's course load and receives a "pass with distinction," "pass," or "fail" grade, assessed by the advisor. It does not count towards the course requirements for graduation, and maximum course credits apply, as stated in the student handbook. If a student enrolls in an Independent Study because he or she has exhausted the IMSA course catalog in a certain field, he or she may, with the advisor's consent, appeal to the Principal that the credits earned in Independent Study be applied towards graduation.

Illinois Virtual High School (IVHS)

IVHS offers a number of on-line courses. Currently, IMSA students may enroll in an IVHS course for credit on a Pass/Fail basis, if the course was developed and is taught by an IMSA faculty member, and if the student is not able to enroll in the equivalent face-to-face course. Students who wish to enroll in an IVHS course need to get approval from their counselor. Information about IVHS can be found at the following website <http://www.ivhs.org/index.learn?action=welcome&bhcp=1>.