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CANISIUS HIGH SCHOOL  
Buffalo, New York

2021-2022  
Course Catalog

## **Mission Statement**

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Canisius High School, located in the city of Buffalo, is a Catholic, Jesuit, independent, college preparatory school serving young men of diverse backgrounds from Western New York. Canisius challenges its students to strive for excellence as critical thinkers and effective communicators who are open to growth, intellectually competent, religiously oriented, loving, and committed to doing justice.

Canisius promotes the development of students through a comprehensive liberal arts curriculum firmly rooted in the Jesuit tradition of education, spirituality, and service.

Faithful to St. Ignatius Loyola's desire to provide care and concern for the whole person, Canisius affords each member of the school community the opportunity to develop individual talents for the service of others and the *greater glory of God*.

## **Disclaimer**

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*While every effort has been made to ensure the accuracy of requirements and information contained herein, this document is not a complete statement of all policies, procedures, rules, and regulations applicable to Canisius High School and its students. Canisius High School reserves the right to make changes, additions, and/or deletions to the information contained herein without prior notice.*

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## **Graduation Requirements**

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Students who successfully complete the requirements listed and detailed below will receive a Canisius High School diploma. Requirements exceed those established by the Board of Regents of the State of New York for graduation from high school in New York State.

Graduation requirements are expressed in terms of credits. One credit generally equals one full-year of study. Courses that meet less frequently award half-credits as determined by the administration. Summer Session courses do not count as credits towards the Canisius High School diploma or towards the minimum load of seven (7) courses per academic year. Summer Session courses are not calculated as part a student's cumulative GPA.

To ensure completion of graduation requirements, Canisius students must enroll in at least seven (7) courses each academic year. Physical Education counts towards this seven-course minimum during senior year only. The Principal's office must approve any exceptions to this policy.

Absence in excess of twenty (20) days for any course may warrant failure and denial of course credit. The Principal's office, in consultation with the Dean of Students, makes determinations regarding denial of credit in the case of absenteeism exceeding twenty (20) days.

<b>Graduation Requirements</b>			
<b>English</b>	4 credits	<b>Physical Education</b>	4 half-credits
<b>History</b>	4 credits	<b>Ignatian Service</b>	4 half-credits
<b>Religion</b>	4 credits	<b>Fine Arts</b>	2 half-credits
<b>Science</b>	3 credits	<b>Health***</b>	1 half-credit
<b>Mathematics</b>	3 credits	<b>Intro to Innovative Technologies</b>	1 half-credit
<b>Foreign Language</b>	3 credits*		
<b>Electives</b>	3 credits**	<b>TOTAL CREDITS</b>	30 credits

\* Students must successfully complete 3 years of a foreign language and complete the third level of study of a language.

\*\* Students typically enroll in three electives during senior year.

\*\*\* Students who take Health during Summer Session must enroll in another half-credit course during sophomore or junior year to fulfill this credit requirement.

## **Scheduling and Course Selection**

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Course selection for the school year takes place during the late winter/early spring of the previous school year.

The course of study followed by a student during his four years at the school is a highly individualized, contextual decision, and the school is dedicated to assisting students in making the course selections most appropriate given a student's progress-to-date, commitments and responsibilities outside of school, and college and career interests. All decisions regarding course selection are made in the context of Canisius' requirements and a student's individual needs and interests.

Canisius expects that the course selection process be taken seriously and be done in conversation between students, parents, counselors, and faculty. Throughout the course selection and scheduling process, the obligation is on the student to ensure prerequisites for courses are met, to obtain necessary signatures and permissions, and to follow up with his counselor, faculty members, and the Assistant Principal with any questions or concerns.

Once the course selection and verification process is complete (typically by May or early June), a student's course requests are considered final. All efforts will be made to schedule a student in his desired courses, provided he meets the necessary prerequisites. Nonetheless, students should be aware that some courses will have restricted enrollment, some classes will be cancelled due to low enrollment or staffing issues, and some combinations of course requests will be impossible to schedule because of conflicts. In these cases, the school will contact the student to resolve the issue.

Canisius will not consider requests for specific teachers or specific daily schedules.

Students enrolled in an Advanced Placement course must take the associated A.P. exam in May. The College Board charges a fee for each A.P. exam a student takes.

# COURSE DESCRIPTIONS FOR 2020-21

## Computer Science

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### **INTRODUCTION TO INNOVATIVE TECHNOLOGIES (full year course - 0.5 credit)**

**DESCRIPTION:** This course, required for all freshman, is an introduction to a variety of topics in computer science. Students will learn some basic CAD design principles, 3D printing, basic programming and app development using Swift, robotics, and Arduino programming and circuit building. This class is designed to appeal to students at all levels of computer science abilities.

**PREREQUISITES:** None.

### **INTRODUCTION TO COMPUTER SCIENCE I (full year course - 0.5 credit)**

**DESCRIPTION:** This course for sophomores is an introduction to the intellectual enterprises of computer science and the art of programming for students of varying abilities. The course will introduce students to basic and intermediate computer science concepts such as conditionals, loops, functions, and algorithms. Additionally, the course will look at the essential elements that go into app development. This is a hybrid course that combines in-class instruction and online course work and will meet in person once per cycle.

**PREREQUISITES:** Department approval.

### **INTRODUCTION TO COMPUTER SCIENCE II (full year course - 0.5 credit)**

**DESCRIPTION:** This course for juniors is an introduction to computer science through the lens of physical computing. Students in this course will learn the basics of programming by interacting with a variety of physical computing devices such as Arduino devices, Raspberry Pi devices, LEGO robotics, drones, 3D printers, and more. Projects will include basic game design, collision detection systems, temperature and humidity detection, programming drones for autonomous flight, and programming and building robots for competition.

**PREREQUISITES:** Department approval.

### **COMPUTER GAME DESIGN (full year course - 0.5 credit)**

**DESCRIPTION:** This course for juniors is an introduction to video game design and programming. Students in this course will learn video game history, taxonomy of video games, gameplay design-components of a video game experience, software architecture for video games, hardware architecture of contemporary video game platforms, game AI, multiplayer game design, game physics, utilizing Adobe software and iPad apps to create game graphics, game interface design, basic principles and vocabulary of graphic design and animation and applying code to imported graphics and sprite animations.

**PREREQUISITES:** None.

### **AP COMPUTER SCIENCE PRINCIPLES (full year course - 1.0 credit)**

**DESCRIPTION:** AP Computer Science Principles introduces junior and senior students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. With a unique focus on creative problem solving and real-world applications, AP Computer Science Principles prepares students for college and career. This course will follow the CS50AP curriculum designed and modeled after the CS50 course at Harvard. All students registered for this course are required to take the AP Computer Science Principles exam. This is a hybrid course that combines in-class instruction and online course work and will meet in person three times per cycle.

**PREREQUISITES:** An 85% average or higher in Introduction to Computer Science I, II, or equivalent coursework and department approval.

**GAME DESIGN AND ANIMATION (full year course - 1.0 credit)**

**DESCRIPTION:** This course for seniors is an introduction to video game design and programming. In this class students will form project groups consisting of both Computer Science and Art students to design, build and demonstrate simple video games. Students in this course will learn video game history, taxonomy of video games, gameplay design-components of a video game experience, software architecture for video games, hardware architecture of contemporary video game platforms, game AI, multiplayer game design, game physics, utilizing Adobe software and iPad apps to create game graphics, game interface design, basic principles and vocabulary of graphic design and animation and applying code to imported graphics and sprite animations.

**PREREQUISITES:** None.

**CYBERSECURITY (full year course – 1.0 credit)**

**DESCRIPTION:** Cybersecurity introduces the tools and concepts of cybersecurity and encourages students to create solutions that allow people to share computing resources while protecting privacy. Nationally, computational resources are vulnerable and frequently attacked; in Cybersecurity, students solve problems by understanding and closing these vulnerabilities. This course raises students' knowledge of and commitment to ethical computing behavior. It also aims to develop students' skills as consumers, friends, citizens, and employees who can effectively contribute to communities with a dependable cyber-infrastructure that moves and processes information safely.

**PREREQUISITES:** Department approval.

## **English**

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**ENGLISH 9 (full year course – 1.0 credit)**

**DESCRIPTION:** Focuses primarily on the fundamentals of English writing skills including grammar, sentence structure, and composition. There is significant emphasis on acquisition and expansion of vocabulary, specifically terms found in the context of literary works, and those identified as important in broadening the depth of students' understanding and clarity in writing. Literature study emphasizes elements of short stories and novels. A close reading of a Shakespearean play, including an examination of literary devices, is an integral part of the course.

**ENGLISH 9 HONORS (full year course - 1.0 credit)**

**DESCRIPTION:** Addresses much of the material covered in English 9 while challenging students with an introduction to analysis and appreciation of classic and contemporary prose and poetry. Composition focuses on analysis of literature, and research writing develops from study of skills necessary for reading, paraphrasing, and organizing pieces of non-fiction information. Writing is also extended to include creative writing; each student is required to compose original work in various forms.

**PREREQUISITES:** Placement determined by entrance exam results and middle school record.

**ENGLISH 10 (full year course - 1.0 credit)**

**DESCRIPTION:** The second part of a four-year comprehensive program in English offering instruction in literature, grammar, vocabulary, and composition. Literary considerations include drama, the novel, the short story, poetry, and an extensive study of mythology. Students also work to refine their mechanics and usage skills. Sophomore composition stresses multi-paragraph writing and an introduction to the thesis format. A separate vocabulary strand cumulatively and systematically improves student vocabulary.

**PREREQUISITES:** Successful completion of English 9

**ENGLISH 10 HONORS (full year course - 1.0 credit)**

**DESCRIPTION:** Includes skills covered in our standard English 10 offering, as well as additional works of longer prose and close consideration of various poetic modes. Additionally, English 10 Honors students are introduced to the thesis format during the first marking period and are expected to compose major theses in each subsequent marking period. Emphasis is also placed on building skills and knowledge necessary for success in advanced placement writing and literature.

**PREREQUISITES:** Student must have an average of 93% in English 9 or 90% for English 9 Honors, recommendation of current English teacher, and department approval. A writing sample may be requested.

**ENGLISH 11 (full year course – 1.0 credit)**

**DESCRIPTION:** An in-depth study of great works of American literature, English 11 encompasses a breadth of styles, genres, and figurative and literary devices, while also examining American literary works for thematic and literary content. Organized thematically around the American dream as it has changed throughout American history, the course emphasizes the development of critical reading and writing skills by pairing nonfiction articles and essays with works of literature from periods spanning discovery and settlement, growth and expansion, the Industrial Age, Modernism, the World Wars, and contemporary times. In the end, a student should come away with the tools necessary for critically examining any written work for its critical lens, contexts, and literary devices. The pedagogical approach includes, but is not limited to, lecture, discussion, individual and group projects, and multimedia presentations.

**PREREQUISITES:** Successful completion of English 10.

**A.P. ENGLISH 11 (full year course - 1.0 credit)**

**DESCRIPTION:** Prepares students for advanced, college-level writing and for successful completion of the Advanced Placement English Literature and Composition exam in May. More than these two obvious goals, however, is the fundamental objective of a course of this nature: to encourage a mastery of writing skills, consummated in original interpretive essays that discuss a variety of genres of literature from classical drama to the post-modern novel and including a variety of poetic forms and styles. The pedagogical approach includes, but is not limited to: lecture, discussion, individual and group projects, and multimedia presentations. The course is structured according to the curricular requirements as described in the College Board's A.P. English Course Description, with an emphasis on works of American literature to dovetail with the study of United States history also undertaken in eleventh grade.

**PREREQUISITES:** Student must have an average of 93% in English 10 or 90% for English 10 Honors, current English teacher recommendation, and department approval. A writing sample may be required.

**ENGLISH 12 (full year course – 1.0 credit)**

**DESCRIPTION:** Focuses on developing college-level writing, research, critical thinking, and literary analysis skills, all of which are vital to being a successful college student. Writing assignments prepare seniors for the level of writing expected of them in college. The course includes various forms of composition currently assigned to students in freshmen university classes, writing and vocabulary exercises, and training in appropriate uses of research and avoidance of plagiarism, an absolute must in college. Professional writing proficiencies and etiquette are also addressed throughout the course. The literature component continues to build on the foundations established in English 11, with a more intense focus on critical reading, analysis, and response. Students read and analyze short stories, poetry, essays and novels that address important connections to the main concepts of Jesuit philosophy, and they connect what they learn to their own experiences.

**PREREQUISITE:** Successful completion of English 11.



**A.P. ENGLISH 12 (full year course - 1.0 credit)**

**DESCRIPTION:** Prepares the student for advanced, college-level writing and for successful completion of the Advanced Placement English Language and Composition exam in May. More than these two obvious goals, however, is the fundamental objective of a course of this nature: to encourage a mastery of reading, comprehending, and writing in a wide variety of modes, with the specific objective of learning to recognize, describe, analyze, and synthesize multifarious rhetorical strategies, devices, and sources of information. Simply put, students learn to identify audience and purpose, tone, rhetorical devices and structures, and elements of individual rhetorical style in order to write original essays that synthesize all of the abovementioned elements in the various modes, including but not limited to: descriptive, narrative, process, example, cause and effect, comparison/contrast, and argumentative/persuasive. Texts are predominantly non-fiction, and works vary in length. Summer reading and writing assignments are required. Finally, students master required citation styles (MLA), grammar, mechanics, and vocabulary.

**PREREQUISITES:** Student must have an average of 93% for English 11 or 90% for A.P. English 11, current teacher recommendation and department approval. A writing sample may be required.

## **Fine Arts**

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### **Visual Arts Courses**

**STUDIO ART (full year course - .5 credit)**

**DESCRIPTION:** An exploration of the elements and principles of design in a variety of media and artistic forms. Motivation for studio projects is based in historic and contemporary styles. Students apply analysis and writing skills to critique their art and the art of others, as well as maintain a sketchbook.

**PREREQUISITES:** None.

**DRAWING AND PAINTING (full year course - .5 credit)**

**DESCRIPTION:** Develops the 2D design principles explored in Studio Art to a more advanced degree. A variety of drawing and painting techniques are explored through still life, landscapes, figurative drawing and abstract styles. Regular use of a sketchbook and self-reflection is required.

**PREREQUISITES:** Studio Art or portfolio review, and department approval.

**SCULPTURE (full year course - .5 credit for underclassmen, 1.0 credit for seniors)**

**DESCRIPTION:** This is a studio class in the 3-dimensional art form. Good craftsmanship and utilization of the principles of design will be emphasized in the creation of sculpture from a variety of media including clay, wire, paper and plaster. Students will experience and develop a greater appreciation for sculpture from different time periods and cultures.

**PREREQUISITES:** Department approval.

**PHOTOGRAPHY (full year course - 1.0 credit)**

**DESCRIPTION:** This course is an exploration of photography techniques. Topics include the composition of photographs, principles of design, lighting, and art criticism related to photography. Manipulation and correction of photographic images will also be covered.

**PREREQUISITES:** None.

### **Music and Performing Arts Courses**

**STRING ORCHESTRA (full year course - .5 credit; 1.0 credit for seniors)**

**DESCRIPTION:** Students in String Orchestra are introduced to chamber music through performance on a bowed (violin, viola, cello, or double bass) string instrument. In addition to rehearsals, students participate in small group lessons. Areas of focus include listening strategies, music theory, music history, performance etiquette, and ensemble playing. Participation in major performance events is

required. The course is offered to all grade levels. Students are required to audition.

**PREREQUISITES:** Audition.

**CONCERT BAND (full year course - .5 credit for underclassmen; 1.0 credit for seniors)**

**DESCRIPTION:** Provides an introduction to concert band and wind ensemble literature through performance on a band instrument. In addition to large group rehearsals, students participate in small group lessons once per cycle. Areas of focus include listening strategies, music theory, music history, performance etiquette, and ensemble playing. Participation in major performance events is required. The course is offered to all grade levels.

**PREREQUISITES:** Audition.

**HAND BELL ENSEMBLE (full year course - .5 credit)**

**DESCRIPTION:** Students in Hand Bell Ensemble participate in a team performance activity as part of an introduction to music history and music theory. Performances will be held both during the school day and occasionally outside of school hours. There is no audition required.

**PREREQUISITES:** None.

**HAND BELL ENSEMBLE FOR SENIORS (full year course – 1.0 credit)**

**DESCRIPTION:** As with the other hand bell ensembles, students in Hand Bell Ensemble for Seniors participate in a team performance activity as part of an introduction to music history and music theory. Performances will be held both during the school day and occasionally outside of school hours. There is no audition required.

**PREREQUISITES:** None.

**GUITAR ENSEMBLE (full year course – .5 credit for underclassmen; 1.0 credit for seniors)**

**DESCRIPTION:** This course is a select ensemble for already proficient guitar students. Finger-picking, advanced strumming techniques, minor keys, blues and pentatonic scales, and rhythm guitar techniques are covered. Students learn more advanced techniques involved with playing in a variety of music styles.

**PREREQUISITES:** Audition.

**INTRODUCTION TO ART AND MUSIC (full year course - .5 credit)**

**DESCRIPTION:** Explorations in Art and Music is an introductory course well-suited to most incoming freshmen. Students spend a semester each exploring the fundamentals of art and music, both in theory and through hands-on activities.

**PREREQUISITES:** None.

**CHORUS (full year course - .5 credit for underclassmen; 1.0 credit for seniors)**

**DESCRIPTION:** An advanced ensemble for students who have already mastered the basics of choral singing. Students continue to refine vocal technique, as well as develop a more in-depth knowledge of music theory and music history. In addition to large group rehearsals, students participate in small group lessons once per cycle.

**PREREQUISITES:** Audition.

**AMERICAN POPULAR MUSIC (full year course - .5 credit)**

This course for sophomores and juniors focuses on American popular music of the 20th and 21st centuries as well as its antecedents. Major topics include Rock, New Orleans Jazz and Dixieland, Vaudeville, and Blues. This course will survey and analyze popular music, and take an in-depth look at how music functions in American popular culture today.

**PREREQUISITES:** None.

**CREATING DIGITAL MUSIC (full year course - .5 credit)**

**DESCRIPTION:** Sophomores and juniors enrolled in this course will use GarageBand and similar applications to create pieces of music while exploring the elements of music and musical form.

**PREREQUISITES:** None.

**Digital Media Arts Courses****GRAPHIC DESIGN (full year course – 1 credit)**

**DESCRIPTION:** Seniors enrolled in this course will focus on developing the creative and technical skills used in applied settings such as advertising, logo development, and poster design. In addition, this class will explore the art of communicating ideas through the use of typography and photography to create motion graphics animation. Students will also explore storytelling methods through the use of hand drawn character illustration and animation. Enrollment limited.

**PREREQUISITE:** None.

**BROADCASTING (full year course –1.0 credit)**

**DESCRIPTION:** Seniors enrolled in this course gain an understanding of delivery skills and video filming, audio recording, and subsequent editing and production. Students write/direct/edit/broadcast audio and visual work. A significant portion of students' produced work will support and showcase student life at Canisius via reports on featured academic, athletic, and extracurricular student achievement. The coverage of live events will also be included in this experience. Enrollment limited.

**PREREQUISITE:** Successful completion of 1 full Fine Art credit.

**Guidance**

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**CAREER EXPLORATION (semester course – not for credit)**

**DESCRIPTION:** Required of sophomores. Students meet once per cycle during the second semester to explore and learn about career options. Topics include: identification and assessment of interests, researching careers, the pathway of high school to college, introduction to the SAT and ACT, and summer opportunities. The purpose of the course is to introduce students to career planning and the college admissions process.

**COLLEGE PLANNING (semester course – not for credit)**

**DESCRIPTION:** Required of juniors. This course is a continuation of Career Exploration. Class meets once per cycle during the second semester of junior year. Juniors learn more detailed information about the college decision-making and application process. Topics include: timeline for the college application process, transcripts, SAT and ACT tests, campus visits, letters of recommendation, introduction to essay writing, college applications, resume writing, scholarships and financial aid, and transition to college life.

**History**

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**GLOBAL HISTORY 9 (full year course - 1.0 credit)**

**DESCRIPTION:** Global History 9 is a one-year survey course that gives the student a broad foundation in Global History, starting with prehistoric times and stretching into the modern era. The objective of this course is to understand the diversity of the world's cultures and history and how they interact with one another. The course also examines the world's geography and the profound influence it has on man and his society. Additionally, much attention is paid to developing Social Studies skills: critical reading, polished writing, and effective classroom participation and note-taking techniques.

**PREREQUISITES:** None.

**A.P. MODERN WORLD HISTORY 9 (full year course - 1.0 credit)**

**DESCRIPTION:** A.P. World History 9 is a one-year course that allows invited freshmen the opportunity to gain college credit. The course is an in-depth, college-level analysis of the history of the world from political structures and trade routes of the post-classical era up to the modern era. All enrolled students take the A.P. exam in May. Due to the rigorous nature of the course, enrollment is restricted to invited freshmen only.

**PREREQUISITES:** Placement determined by entrance exam results and middle school record.

**GLOBAL HISTORY 10 (full year course - 1.0 credit)**

**DESCRIPTION:** This course provides the student with a more intensive understanding of world history starting in the late Middle Ages and ending with the modern era. Students examine the political, religious, economic, social and cultural development of civilization, comparing different cultures and countries for a true understanding of these time periods. Students are also encouraged to make connections between Western and Eastern nations, and understand links between a nation's past and its current economic, political and social environment. Advanced skills in reading and writing are emphasized.

**PREREQUISITES:** Successful completion of Global History 9 or A.P. Modern World History.

**A.P. EUROPEAN HISTORY (full year course - 1.0 credit)**

**DESCRIPTION:** The AP European History class is a year-long, college level course for sophomores concentrating on the history of Europe and Western Civilization from the Renaissance to the modern day. This class will mirror many of the Western Civilization classes taught at the undergraduate level in many colleges today. The class will present the social, economic, political and military movements that have come to define Europe over the centuries. Students will be prepared for the AP exam in this topic administered in May.

**PREREQUISITES:** An 85% or above average in A.P. Modern World History or an 87% or above average in Global History 9 and department approval.

**UNITED STATES HISTORY (full year course - 1.0 credit)**

**DESCRIPTION:** United States History is a required course offered to juniors. The course is a general survey of the history of the United States from the Age of Exploration to the present. Thorough attention will be paid to all aspects of American life: political, economic, social, religious, etc. Through development of such skills as critical thinking, reading, and evaluative writing, students are expected to fulfill the requirements of this course.

**PREREQUISITES:** Successful completion of Global Studies 9 or A.P. Modern World History and Global History 10 or A.P. European History.

**A.P. UNITED STATES HISTORY (full year course - 1.0 credit)**

**DESCRIPTION:** This course for juniors is a survey of United States History from the pre-Columbian era to the present day. College level textbooks and reading are assigned, and students should expect a very significant amount of quizzing and testing throughout the course. Superlative reading and writing skills are emphasized and expected. All enrolled students take the A.P. exam in May.

**PREREQUISITES:** An 85% or above average in A.P. European History or an 87% or above average in Global History 10 and department approval.

**AMERICAN GOVERNMENT (semester course – .5 credit)**

**DESCRIPTION:** This senior course pairs with *Economics* (see description below). Students study the principles, foundations and workings of American Government – institutions of government, public policy, public law, public opinion and vote behavior, interest group behavior, effects of the media and

theories of democracy. To enhance comprehension and analysis skills, students complete various assignments, projects, readings, extensive forms of writing, as well as tests and quizzes. It is essential that students studying Government follow current events on a daily basis.

**PREREQUISITES:** Successful completion of the first three years of the History curriculum. Students must be concurrently registered for Economics.

**ECONOMICS (semester course – .5 credit)**

**DESCRIPTION:** This senior course pairs with *American Government*. The course provides students with the economic knowledge and skills that will enable informed and economically literate citizenship in our society and in the world. Students examine both macro- and microeconomic concepts, including the problem of scarcity, types of economic systems, forms of business organizations, and supply and demand. In addition, students take an in-depth look at the price system in the United States, employment, labor, wages, Gross National Product and Gross Domestic Product, and the Federal Reserve System.

**PREREQUISITES:** Successful completion of the first three years of the History curriculum. Students must be concurrently registered for American Government.

**A.P. UNITED STATES GOVERNMENT AND POLITICS (full year course - 1.0 credit)**

**DESCRIPTION:** In this course senior students will study the principles, foundations and workings of American Government and Macroeconomics at an advanced, college level pace. The course will examine the various philosophies of government, the institutions of U.S. government, campaigns, political parties, voting behavior, etc. In addition, the class will examine the various branches of our government, how they relate to each other and the role of the American people in this process. In Macroeconomics, students will be exposed to laws of supply and demand, taxation, money and banking, trade, etc. Students are required to take the national AP Exam offered in May in U.S. Government and Politics.

**PREREQUISITES:** An 85% or above average in A.P. United States History or an 87% or above average in United States History and department approval.

**HISTORY OF BUFFALO AND WESTERN NEW YORK (full year course – 1.0 credit)**

**DESCRIPTION:** This full-year senior elective in history will primarily investigate the histories of Buffalo and Niagara Falls, from the earliest settlements to modern day. The course will explore the historical periods of the cities in relation to America's history. It will focus on the growth, decline and current resurgence of our home. Finally, it will also include researching the history of our own Western New York suburbs, and Canisius High School history. Students should expect a rigorous course, similar to that of an AP level history course with intensive coursework and reading. This course is designed for someone who truly loves history and wants to go beyond the basics. This class will have numerous research projects/papers, presentations, discussions, readings, and field trips. Students must be willing and able to meet periodically outside of normal school hours to attend field trips (at an additional cost).

**PREREQUISITES:** An 80% average or higher in AP United States History or United States History.

**INTRODUCTION TO CONSTITUTIONAL LAW (full year course – 1.0 credit)**

**DESCRIPTION:** In this course senior students will analyze the development of the American legal system. The class is taught in a college-level, seminar format with emphasis on breeding collegiate skills such as note-taking, critical evaluation and writing, and comprehensive essay tests. First semester is a study of casework dealing with the institutions of government (executive, legislative, judiciary), federalism, Native American rights and economic liberties. The second semester is dedicated to civil rights and liberties.

**PREREQUISITES:** Successful completion of the first three years of the History curriculum.

## **Language**

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### **LANGUAGES – LEVEL 1 (full year course – 1.0 credit)**

Level 1 includes the following courses: **French, Mandarin Chinese, and Spanish.**

**DESCRIPTION:** These courses are designed to foster basic comprehension and communication in the target language. Goals include developing a grasp of basic grammar topics and an introduction to the history and culture of the language. These goals are achieved through the development of skills in listening, writing, speaking and reading in the target language. It may also be taken as an elective by a student who has already completed level three in another language but still needs to complete the three-year language requirement at Canisius.

**PREREQUISITES:** None.

### **LANGUAGES – LEVEL 2 (full year course – 1.0 credit)**

Level 2 includes the following courses: **French, Mandarin Chinese, and Spanish.**

**DESCRIPTION:** These courses are designed to foster an extension of basic comprehension and communication in the target language. Goals include a grasp of advancing grammar topics and their functionality within the target language, and an extension of the introduction to the history and culture of the language. These goals are achieved through the development of skills in listening, writing, speaking and reading in the target language.

**PREREQUISITES:** Successful completion of level 1 of the same language, or the placement exam demonstrating mastery of material covered in level 1 as determined by the department.

### **LANGUAGES – LEVEL 3 (full year course – 1.0 credit)**

Level 3 includes the following languages: **French, Mandarin Chinese, and Spanish.**

**DESCRIPTION:** This course is designed to foster communication through conversation and comprehension. Goals include making use of advanced grammar topics and vocabulary in order to communicate in practical and realistic situations by speaking, listening, reading, and writing in the target language. A continuation of the history and culture of the language is stressed.

**PREREQUISITES:** Successful completion of Level 2 of same language.

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### **SPANISH 3 HONORS (full year course – 1.0 credit)**

**DESCRIPTION:** This course is designed to foster advanced communication through conversation and comprehension. Class activities are based on realistic and practical situations in which the target language will be employed in all aspects including speaking, listening, reading, and writing. An emphasis on the culture of Spanish speaking countries is made, which will require students to share views and impressions in the target language. Students are expected to have a working knowledge of advanced grammar topics. This course is a preparatory class for students wishing to pursue the language in the year(s) following.

**PREREQUISITES:** Successful completion of Spanish 2 with a 90% or above average and department approval.

### **SPANISH 4 (full year course – 1.0 credit)**

**DESCRIPTION:** Spanish 4 is an advanced level course and is conducted primarily in Spanish. A review of the grammar structures from previous levels will be expanded into more complex and compound grammatical structures. Students will be introduced to authentic literary works from a variety of mediums.

**PREREQUISITES:** Successful completion of Spanish 3 with an 85% or above average or Spanish 3 Honors with an 80% or above average and department approval.

**FRENCH 4 (full year course – 1.0 credit)**

**DESCRIPTION:** French 4 is an advanced level course and is conducted primarily in French. The course will begin with a review of simpler grammar structures covered in the lower levels of French and continues a study of complex and compound structures. The course will also introduce students to readings designed to help them make the transition from highly controlled materials used at the elementary level of language instruction to the appreciation of authentic, unabridged literary works from francophone world. Students also develop their writing and communication skills through exposure to current political and social events.

**PREREQUISITES:** Successful completion of French 3 with an average of 85% or above and department approval.

**CHINESE 4 (full year course – 1.0 credit)**

**DESCRIPTION:** Chinese 4 is an advanced level course and is conducted primarily in Chinese. A review of the grammar structure from previous levels will be expended into more complex and compound grammatical structures. Students will be introduced to authentic literary works from a variety of mediums.

**PREREQUISITES:** Successful completion of Chinese 3 with an 85% or above average and department approval.

**LATIN 1 (full year course - 1.0 credit)**

**DESCRIPTION:** Latin 1 is required for students beginning their sequence in Latin. The goals of the course are basic comprehension in Latin, a grasp of basic vocabulary and grammar, and an introduction to the history and culture of Roman civilization. These goals are achieved through the development of skills in reading and translation, and, to a lesser extent, composition in Latin. Links between Latin and English vocabulary are also highlighted.

**PREREQUISITES:** None

**LATIN 2 (full year course - 1.0 credit)**

**DESCRIPTION:** Latin 2 is a continuation of the three-year Latin sequence. The course divides basically into two parts. During the first part, basic Latin grammar is completed; during the second part, reading and comprehension are central. The student continues to increase his vocabulary in the target language and is helped to move from literal translation to one that is much smoother, while retaining the meaning as accurately as possible. Links between Latin and English vocabulary continue to be highlighted. The student also enters further into Roman history and culture.

**PREREQUISITES:** Successful completion of Latin 1 or the Latin Placement Exam demonstrating mastery of material covered in Latin 1 as determined by department.

**LATIN 3 (full year course - 1.0 credit)**

**DESCRIPTION:** Latin 3 is a culmination of the three-year Latin sequence. The goal of the course is to expose the students to the basic authors of Latin literature. These include Caesar, Catullus, Cicero, Horace, Vergil, Ovid, and Pliny.

**PREREQUISITES:** Successful completion of Latin 1 and 2.

**LATIN 4 (full year course - 1.0 credit)**

**DESCRIPTION:** This is a one-year seminar and reading course. The year focuses on Caesar's *Gallic Wars* and Virgil's *Aeneid*. The goal is to develop an appreciation and fluency of these ancient masterworks.

**PREREQUISITES:** Successful completion of Latin 3 with an 85% or above average and department approval.

**LATIN 1 FOR UPPERCLASSMEN (full year course - 1.0 credit)**

**DESCRIPTION:** Latin 1 for Upperclassmen is an elective course open to juniors and seniors who meet the prerequisites. The goals of the course are basic comprehension in Latin, a grasp of basic vocabulary and grammar, and an introduction to the history and culture of Roman civilization. These goals are achieved through the development of skills in reading and translation, and, to a lesser extent, composition in Latin. Links between Latin and English vocabulary are also highlighted. Beyond these, this course includes a survey of Roman history, warfare, and culture that is normally included in Latin 2 through 4.

**PREREQUISITES:** None for Seniors; Juniors must have completed Level 3 of a language.

**ITALIAN FOR SENIORS (full year course - 1.0 credit)**

**DESCRIPTION:** Italian for Seniors is an elective course open to seniors. The goal of the course is to foster basic comprehension and communication in Italian. There will be extensive practice of the four fundamental skills: speaking, listening, reading and writing. The history and culture of Italy will be taught through culinary hands-on demonstrations and famous Italian movies, music and sports. This course includes occasional field trips to the Italian Cultural Center, local Italian grocery stores, bakeries and restaurants. Integrated throughout the course are lessons and readings linked to daily activities. Students will study from north to south, west to east the twenty regions of Italy and how each region is unique in its' own culinary, linguistic, historic and contemporary way.

**PREREQUISITES:** None.

## **Mathematics**

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**ALGEBRA I (full year course – 1.0 credit)**

**DESCRIPTION:** This course is structured around problems and investigations that build conceptual understanding of algebraic topics and an awareness of connections between different ideas. Students are encouraged to investigate, communicate their thinking, and generalize. Topics include: representing functions in a variety of ways, collecting and analyzing data, linear and quadratic equation solving, factoring, distributing, and manipulating polynomials, solving contextual word problems using multiple strategies, analyzing lines, and solving systems. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** None

**GEOMETRY (full year course - 1.0 credit)**

**DESCRIPTION:** This course is structured around problems and investigations that build spatial visualization skills, conceptual understanding of geometry topics, and an awareness of connections between different ideas. To develop their reasoning skills, students are encouraged to investigate, conjecture, and then prove. Topics include transformations, angle relationships, similarity and congruence proofs, properties of quadrilaterals, coordinate proofs, trigonometry, circles, solids, and probability. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Algebra I or department approval based on incoming student's placement test results.

**GEOMETRY HONORS (full year course - 1.0 credit)**

**DESCRIPTION:** This course program is designed for students who have demonstrated both superior ability and interest in mathematics. Through examples and exercises, the students should gain some real expertise in this branch of mathematics. The pace will be appropriate for an Honors class. It will allow time for a deeper investigation of the traditional topics, as well as covering, in some detail, those topics which are optional in other programs. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Algebra I with a final average of 93% or higher and



department approval, or invitation by the department based on incoming student's placement test results.

**ALGEBRA II/TRIGONOMETRY (full year course - 1.0 credit)**

**DESCRIPTION:** This course aims to apply and extend what students have previously learned by focusing on looking at multiple representations of functions and relations and on finding connections among the ideas they are studying. Topics include: linear, quadratic, exponential, absolute value, logarithmic, hyperbolic, circular, and trigonometric functions, along with their transformations, solving linear and quadratic systems, and using order and equivalence properties of algebra to rewrite algebraic expressions in more useful forms. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Geometry or Geometry Honors.

**ALGEBRA II/TRIGONOMETRY HONORS (full year course - 1.0 credit)**

**DESCRIPTION:** This course is designed for those students who have demonstrated both superior ability and interest in mathematics. Through examples and exercises, the students should gain some real expertise in this branch of mathematics. The pace will be appropriate for an Honors class. It will allow time for a deeper investigation of the traditional topics, as well as covering, in some detail, those topics which are optional in other programs. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Geometry Honors with a final average of 85% or higher and department approval, or successful completion of Geometry and Algebra I with a final average of 93% or higher in each course and department approval.

**PRE-CALCULUS (full year course - 1.0 credit)**

**DESCRIPTION:** This course is intended to prepare the student for Calculus. The topics include transformation of functions, periodic functions and their graphs, inverses, exponentials, and logarithmic equations and their applications, area under a curve using a Riemann Sum, and limits to infinity and at a point. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Algebra II/Trigonometry or Algebra II/Trigonometry Honors, a minimum cumulative average of 80% in previous Mathematics courses, and department approval.

**PRE-CALCULUS HONORS (full year course - 1.0 credit)**

**DESCRIPTION:** This course provides an intensive study of pre-calculus topics and introductory calculus topics. This course is intended to prepare students for A.P. Calculus AB or BC. In addition to the topics for pre-calculus, this course will also cover: average rates of change and instantaneous rates of change, polar and parametric graphing, vectors, and series. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Algebra II/Trigonometry Honors with a final average of 85% or higher and department approval, or successful completion of Algebra II/Trigonometry with a final average of 93% or higher and department approval.

**ADVANCED PLACEMENT CALCULUS (AB) (full year course - 1.0 credit)**

**DESCRIPTION:** This course will cover the curriculum of College Calculus I. The topics include: building of mathematical models (functions), differentiation, integration, and applications of these techniques (with emphasis on financial, scientific, and engineering applications. A very strong background in Algebra is assumed and essential. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Pre-Calculus with a final average of 90% or higher or successful completion of Pre-Calculus Honors with a final average of 85% or higher, and department approval. (Students taking summer Pre-Calculus class may also be considered).

**ADVANCED PLACEMENT CALCULUS (BC) (full year course - 1.0 credit)**

**DESCRIPTION:** This course will cover the curriculum of College Calculus I and II. The topics include: functions, graphs, and limits; derivatives; integrals; and polynomial approximation and series. This course is rigorous and a strong mathematical background is necessary. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Pre-Calculus Honors with a final average of 93% or higher, and department approval, or successful completion of Pre-Calculus with a final average of 95% or higher and department approval. (Students taking summer Pre-Calculus class may also be considered).

**ADVANCED PLACEMENT STATISTICS (full year course - 1.0 credit)**

**DESCRIPTION:** This course can be taken alone or concurrently with another math course. The topics include: exploring data (describing patterns and the departure from patterns); sampling and experimentation; exploring random phenomena using probability and simulation; and exploring statistical inference by estimating population parameters and testing hypotheses. This is a rigorous course and requires both strong math and writing skills. A TI-Nspire graphing calculator (Non CAS Version) is required for this course.

**PREREQUISITES:** Successful completion of Algebra II/Trigonometry and a final average of 90% or higher and department approval OR Successful completion of Algebra II Trigonometry Honors or Pre-Calculus with a final average of 85% or higher and department approval OR successful completion of Pre-Calculus Honors. This course can be taken concurrently with Algebra II Trigonometry Honors with department approval.

**APPLIED STATISTICS (full year course – 1.0 credit)**

**DESCRIPTION:** Students learn the principles of statistical reasoning in an accessible and enjoyable way that helps to prepare them for life in the twenty-first century. In a data-saturated world, students learn to ask thoughtful questions, properly analyze data, and use critical thinking skills to draw appropriate conclusions and recognize inappropriate conclusions made by others. Is it harder to shoot free throws with distractions? The course explores questions like this by designing an experiment, collecting the data, and using a hands-on simulation to analyze results. This course emphasizes statistical literacy and developing statistical thinking using real data, and it stresses conceptual understanding, rather than mere knowledge of procedures.

**PREREQUISITES:** Successful completion of Algebra II/Trigonometry with a minimum average of 75% or higher in previous math course, and department approval.

## **Physical Education**

**PHYSICAL EDUCATION 9 (full year course – .5 credit)**

**DESCRIPTION:** This course meets for two classes per cycle. The curriculum consists of warm-up and stretching exercises in each class and skill development, strategy and rules discussion including safety rules for all activities. There are numerous activities developed in class culminating in game play for touch football, soccer, team handball, basketball, volleyball, floor hockey, and softball. Individual skills are developed in the weight training, wrestling, swimming, and track and field units. The students also participate in a project adventure unit that includes icebreaker games, group initiatives, and trust games. Students are graded subjectively using attendance, participation and cooperation as guidelines.

**PREREQUISITES:** None.

**PHYSICAL EDUCATION 10 (full year course – .5 credit)**

**DESCRIPTION:** This course meets for two classes per cycle. The curriculum consists of warm-up and stretching exercises in each class and skill development, strategy, and rules discussion including safety rules for all activities. There are numerous activities developed in class culminating in game play for touch football, soccer, team handball, basketball, volleyball, floor hockey, and softball. Individual skills are developed in the weight training, swimming, racquetball, and track and field units. Students are graded subjectively using attendance, participation and cooperation as guidelines.

**PREREQUISITES:** None

**PHYSICAL EDUCATION 11 (full-year course – 0.5 credit)**

**DESCRIPTION:** This course meets for two classes per cycle. The curriculum consists of prior topics taught at the freshman and sophomore levels. Students are now afforded the opportunity to practice/play what has been taught and use it in a game situation. Activities that will be covered during junior year will be touch football, soccer, team handball, basketball, volleyball, floor hockey, weight training as well as lifetime activities. Activities will depend on space availability and class size. Students are graded subjectively using attendance, participation and cooperation as guidelines.

**PREREQUISITES:** None

**PHYSICAL EDUCATION 12 (full-year course – 0.5 credit)**

**DESCRIPTION:** This course meets for two classes per cycle. The curriculum consists of prior topics taught at the freshman and sophomore levels. Students are now afforded the opportunity to practice/play what has been taught and use it in a game situation. Activities that will be covered during senior year will be touch football, soccer, team handball, basketball, volleyball, floor hockey, weight training as well as lifetime activities. Activities will depend on space availability and class size. Students are graded subjectively using attendance, participation and cooperation as guidelines.

**PREREQUISITES:** None

**HEALTH (full year course – 0.5 credit)**

**DESCRIPTION:** Must be taken during sophomore year or during the summer prior to or after sophomore year. Health meets for three classes per cycle and its topics include: human growth and development, emotional health, nutrition, environmental health, family life education, disease and disorders, tobacco, alcohol, drugs, consumer health, first aid, community health, healthy lifestyles, self-esteem, decision making, and teen pregnancy. Topics are covered through lectures, class discussions, videos, group work, and guest speakers when available.

**PREREQUISITES:** None

**Religious Studies**

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**RELIGION 9 (full-year course – 1.0 credit)**

The course for freshmen is an introduction to Scripture and Christology. After a brief introduction to Key Concepts in Roman Catholicism, students begin the study of Christian Scriptures, especially the Gospels, and explore the background, life, death and Resurrection of Jesus Christ. The central questions of the course are: Who was Jesus of Nazareth? How did his Jewish background influence his life and teaching? How did his followers so readily come to understand him as the Christ, the anointed one sent by God? How did the Church recognize him as the divine Son of God who offers salvation to all humanity? The course culminates with a look at each student's growth during freshman year according to the principles of the Jesuit high school "Graduate at Graduation."

**PREREQUISITES:** None

**RELIGION 10 (full-year course – 1.0 credit)**

Semester 1: Hebrew Scriptures. This course for sophomores fosters an appreciation of the Hebrew Scriptures as a work of literature and as a religious text. The course investigates how God revealed God's self to the Israelites and fostered a relationship with them through covenants and the work of the prophets. Students become familiar with the content of the Old Testament, understand the cultural and historical circumstances affecting that content, and apply the lessons learned to their personal lives.

Semester 2: World Religions. This semester offers students a comparative perspective on some of the major world religious traditions, including, but not limited to, Buddhism, Hinduism, Islam, and Judaism. The course enables students to use the study of other religions to deepen their own faith, to understand the connections and differences among faith, religions and culture, and to develop a spirit of openness and appreciation for other religious traditions.

**PREREQUISITES:** Successful completion of Religion 9.

**RELIGION 11 (full-year course – 1.0 credit)**

Semester 1: Church History. This course for juniors helps students understand that in and through the Church, they encounter the living Jesus Christ. Students come to know that the Church is the living Body of Christ today, a Body with both divine and human elements. The course investigates the identity, nature, and mission of the Church through the lens of Church History from apostolic times to the present. Students are introduced to the founding of the Church by Christ through the Apostles and its sustenance throughout history by Christ through the Holy Spirit. Students learn about the Church's 2,000 years of history and how the Church is led by the successors of the Apostles.

Semester 2: Catholic Ethics. The purpose of this course is to help students understand that for Christians, God's plan for their lives is lived out fully through Christ. Students will learn ethical concepts, the influences of other philosophical ethical systems, and precepts that govern the lives of Christian disciples. The course challenges students to consider the application of these precepts to their own lives and the implications of doing so with regard to personal and societal moral issues.

**PREREQUISITES:** Successful completion of Religion 9 and 10.

**Religion 12 (full-year course – 1.0 credit)**

Semester 1: Social Justice. This course invites students to reflect on a fundamental theological concept in Christianity in the Jesuit tradition, namely, social justice. Students examine Catholic Social Teaching by reflecting on what is meant by justice, building a peaceful community, respecting the environment and encouraging a culture of compassion. The course includes a study of major Church documents and papal encyclicals.

**PREREQUISITES:** Successful completion of Religion 9, 10, and 11

Semester 2: Jesuit Spirituality. This course for seniors exposes students to various themes and methods in the spirituality developed by St. Ignatius of Loyola and practiced by Jesuits and their colleagues over the past 475 years. The course places specific emphasis on the role of Ignatian discernment within the context of Ignatian spirituality. Students explore Jesuit spirituality and humanism through primary sources such as *The Autobiography of St. Ignatius of Loyola* and *The Spiritual Exercises*, as well other pertinent sources.

**Religious Studies 12 Honors:** This is a 3-credit college Religious Studies course offered at CHS through Canisius College. Students will receive a college transcript upon completion of this class. The course is an introduction to the nature of religion and a comparative study and analysis of religious belief and experience. Major foci include the definitions of religion, forms of religious expression and experience, religious structures and worldviews, and the issues of secularization, modernity and

fundamentalism on contemporary religion as well as specific religious traditions. There is an additional charge of \$250 (payable to Canisius College).

**PREREQUISITES:** Successful completion of, and minimum average of 93% in Religion 9, 10, and 11 and department approval.

## **Science**

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### **EARTH SCIENCE (full year course - 1.0 credit)**

**DESCRIPTION:** Most incoming freshmen take Earth Science. The course focuses on atmospheric science, contour mapping, basic chemistry, rocks and minerals, weathering and erosion, oceanography, tectonic activity, geologic history, and current environmental issues. In addition to the subject matter of the course, students learn to interpret weather and topographic maps, construct graphs and tables, and use a variety of scientific instruments for data collection. Students are encouraged to think critically, organize and evaluate data, and complete a variety of laboratory exercises.

**PREREQUISITES:** None.

### **BIOLOGY (full year course - 1.0 credit)**

**DESCRIPTION:** Biology is the study of living systems. Using the New York State Regents Curriculum as a guide, the course starts by exploring the chemical and cellular basis of life. The second quarter emphasizes the basics of inheritance and molecular genetics. Evolution is used to tie together all the concepts of the first semester and as a theme in the second. The rest of the year consists of a survey of the different ways' organisms accomplish tasks such as transportation, nutrition, and locomotion. Throughout the year students will explore current trends in biology including genetic engineering, cloning and bioinformatics.

**PREREQUISITES:** With the exception of Ignatian Scholars, successful completion of Earth Science. Incoming freshmen may place into Biology upon verification of successful completion of Regents Earth Science in 8<sup>th</sup> grade with a score of 85% or higher on the Physical Setting Regents Exam.

### **CHEMISTRY (full year course - 1.0 credit)**

**DESCRIPTION:** General Chemistry introduces the major areas and topics in a New York State Regents level chemistry course. The major emphasis of the course is an understanding of the underlying concepts rather than the recall of factual data. Most tests and quizzes are aimed at problem solving by application of the appropriate principles and rules; seldom is simple factual recall tested. The laboratory portion of the course serves to verify and visually demonstrate the basic topics covered in the classroom. The major areas of chemistry covered include: atomic structure and electron organization, mole conversions, writing chemical equations, stoichiometry and the limiting reagent, thermochemistry, gas laws, Lewis structures and drawing simple organic compounds, aqueous solutions, and acid base chemistry. The major areas of scientific mathematics that are taught in this course include scientific notation, significant figures, and unit conversions through decimal analysis.

**PREREQUISITES:** With the exception of Ignatian Scholars, successful completion of Earth Science and Biology.

### **GENERAL PHYSICS (full year course - 1.0 credit)**

**DESCRIPTION:** The purpose of this course is to introduce the student to the major areas of classical physics. The course is taught from both a mathematical and conceptual perspective to give a solid foundation for further scientific study. Problem solving, and critical thinking skills are stressed in the curriculum. Much of the first semester is spent discussing Newtonian Mechanics and mechanical systems. The second semester is divided up into three main parts; waves/optics, electricity and magnetism, and atomic and nuclear physics. Supplemental topics may include quantum mechanics, special relativity, and electronics.

**PREREQUISITES:** With the exception of Ignatian Scholars, successful completion of Earth Science, Biology, and Chemistry. In addition, students should have successfully completed or will be concurrently enrolled in Algebra II/Trigonometry.

### **INTRODUCTION TO ENGINEERING (full year course - 1.0 credit)**

**DESCRIPTION:** This course introduces students to various aspects of civil, mechanical, and electrical engineering, and architecture through a combination of hands-on projects and theoretical analysis. Students design, build, and test small-scale versions of bridges, buildings, robots, and other structures and compare them to real-life examples. Design aspects covered include desired functions of structures along with desired aesthetics. Construction methods range from simple “wood and glue” activities to more advanced 3-D printing methods. Participation in outside engineering contests is a possibility. Students may also have the opportunity to use their skills on a charity project helping others in need.

**PREREQUISITES:** Successful completion of three years of high school science.

### **FORENSIC SCIENCE (semester course - 0.5 credit)**

**DESCRIPTION:** This course for seniors will provide a strong foundation in the fascinating field of forensics and crime scene investigation. If you have ever wondered “who?” “what?”, “when?” and “how?” or are fascinated by shows such as CSI, this is the course for you. Topics of study in this course will include: hair and fiber analysis, pollen studies, blood spatter analysis, fingerprinting, blood typing, DNA analysis, tool marks, bone and teeth identification, ballistics, tire and footprint analysis, drug identification, handwriting analysis and more. Class format will include lecture, class discussion and a large percentage of laboratory activities. Numerous case studies will be included to illustrate the use of Forensics throughout the ages of crime scene investigation. There will be at least one project/presentation on a specific area of interest as agreed upon by the instructor and student. There will be assigned readings and Internet research given on a regular basis. Tests will be given based on classroom lectures and discussions, as well as assigned readings and case study material. There will be a final exam at the end of the course.

**PREREQUISITES:** Successful completion of three years of high school science. In addition, students must be concurrently registered for Astronomy.

### **ASTRONOMY (semester course – 0.5 credit)**

**DESCRIPTION:** This course for seniors will provide an in-depth view of our solar system and the following topics: The Big Bang Theory and origin of elements; the structure of the sun and nuclear fusion; units of measurement in space and the electromagnetic spectrum; the life cycle of a star and formation of galaxies; the existence and implication of black holes; the phases of the moon; the possibility of life on other planets. This course will be taught through lecture, computer-based simulations, and hands-on laboratory experiments. There will be a final exam at the end of the course.

**PREREQUISITES:** Successful completion of three years of high school science. In addition, students must be concurrently registered for Forensics.

### **A.P. BIOLOGY (full year course - 1.0 credit)**

**DESCRIPTION:** The A.P. Biology course follows the Advanced Placement Biology curriculum. During the first quarter there will be some review on anaerobic and aerobic respiration, photosynthesis, and other chemical pathways. A summer reading assignment and test can be utilized to review some of that material. The second quarter covers the chemical processes involved in protein synthesis and cellular reproduction. It concludes with an overview of evolutionary theories and population genetics. The second semester will include a selection of phyla survey in conjunction with human anatomy/physiology. Numerous case studies and laboratory experiences will be utilized to illustrate curriculum concepts and to align more with the newly redesigned curriculum.

**PREREQUISITES:** A 90% or above average in Biology and Chemistry and either successful completion of Physics with a 90% or above average or concurrent enrollment in Physics, and departmental approval.

**A.P. CHEMISTRY (full year course - 1.0 credit)**

**DESCRIPTION:** The A.P. Chemistry course follows the Advanced Placement Chemistry curriculum. The course is equivalent to the freshmen college general chemistry course covering atomic theory, structure and states of matter, solutions, equilibrium, electrochemistry, parts of organic chemistry, and descriptive chemistry. There is a laboratory component to the course following the Advanced Placement Chemistry curriculum. There is also a summer assignment that is distributed in the spring prior to the summer before starting the course.

**PREREQUISITES:** A 90% or above average in Biology and Chemistry and either successful completion of Physics with a 90% or above average or concurrent enrollment in Physics, and departmental approval.

**A.P. PHYSICS (Mechanics) (full year course - 1.0 credit)**

**DESCRIPTION:** The A.P. Physics course follows the Advanced Placement Physics (Mechanics) curriculum. This course prepares students to take the Advanced Placement Physics C (Mechanics) Exam. The course is equivalent to a first semester physics course for science and engineering students at the college-level. The goals of the course are to build a fundamental understanding of Newtonian Mechanics and develop the mental maturity required to study the physical sciences in college. Problem solving skills are strongly emphasized along with the ability to incorporate previously learned knowledge and skills into new situations.

**PREREQUISITES:** A 90% or above average in Biology, Chemistry, and General Physics, and departmental approval. Students enrolling in the course must have completed or be concurrently enrolled in Calculus.

**A.P. PSYCHOLOGY (full year course - 1.0 credit)**

**DESCRIPTION:** The A.P. Psychology course follows the Advanced Placement Psychology curriculum. The A.P. Psychology course is designed to introduce students to the systematic and scientific study of the behavior and mental processes of human beings and other animals. Students are exposed to the psychological facts, principles, and phenomena associated with each of the major subfields within psychology.

**PREREQUISITES:** An 85% or above average in Biology and Chemistry, and departmental approval.