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Mission Statement
St. John’s is an independent, co-educational day school presenting a 13-year sequence of college preparatory training. A non-profit institution, it was founded in 1946 to provide the community with a school of exacting standards in the development of individual, spiritual, ethical, intellectual, social and physical growth. While the means to achieve that purpose may change, it remains the basic mission of the School.

The School seeks to develop the whole person in preparation for a lifetime of personal fulfillment and contribution to society. In particular, it is dedicated to the enhancement and the expansion of future leadership for Houston and the country. The School offers talented, motivated, and energetic students a genuine challenge for academic accomplishment and for development of a sense of self-worth and of personal responsibility. The School in turn holds itself responsible for providing that challenge.

Graduation Requirements
In order to graduate from St. John’s School, a student must accumulate a minimum of 17.5 credits by successfully completing the following:

• English I, English II, AP English Language, English IV (Honors)
• Global Issues in Historical Context, Modern World History, and United States History (Honors)
• Geometry, Algebra II, and Precalculus
• Biology I, Chemistry I, and Physics I
• Through Level III of a world language
• Fine arts classes or performing ensembles (one credit; as outlined in the section entitled “Fine Arts Graduation Requirement”)
• Additional elective courses

In addition to the above credit requirements, students must also participate in Physical Education (as outlined in the section entitled "Physical Education Graduation Requirement").
Fine Arts Graduation Requirement

Students may fulfill the one-credit fine arts graduation requirement in a variety of ways involving either graded, non-auditioned courses (described in the course offerings) or certain co-curricular ensembles.

1. **Fine Arts Courses** - Includes graded semester (1/2 credit) and year-long (1 credit) courses not requiring auditions in visual arts, digital arts, music, and theatre as described in the course offering section of this guide.

2. **Fine Arts Co-Curricular Program** - (non-graded performance-based ensembles open by audition that supplement the general curriculum in dance and music).

   **Choral Music:**
   - Les Chanteuses, Kantorei, Chorale
     (½ credit for each year of participation)

   **Instrumental Music:**
   - Winds, Strings, Jazz
     (½ credit for each year of participation)

   **Dance:**
   - Caprice I (½ credit for each year of participation after the P.E. requirement has been met)
   - Caprice II, Caprice III, and Terpsichore
     (1 credit for each year of participation after the P.E. requirement has been met)

Students must participate in the co-curricular ensembles including scheduled performances for an entire year in order to earn credit toward the graduation requirement. Students withdrawing from any one of these before the end of the year will earn NO credit.

Dance classes taken in grade 9 and used for P.E. credit at that time, may not subsequently be applied to Fine Arts credit.

Physical Education Graduation Requirement

The St. John’s one-credit graduation requirement in Physical Education will be fulfilled during the ninth grade year. Students may earn Physical Education credit using one of the following options:

- Participate on one St. John’s sanctioned athletic team, JV or Varsity.
- Participate in two trimesters of Physical Education (PE) classes.
- Participate in the St. John’s cheerleading program during Fall or Winter trimester.
- Participate in a St. John’s Dance Ensemble. Note: This requires a full year commitment. A dance ensemble may not be used to earn both a Physical Education credit and a Fine Arts credit concurrently.
COURSE OFFERINGS

The following reflects a sampling of courses offered in the St. John’s Upper School. Unless otherwise noted, courses are yearlong.

NOTE: All courses must have a minimum number of students enrolled (generally 10) who can take the course at a single period in order for it to be offered.

- **English I**
  (1 credit; required for class 9)
  English I emphasizes the critical reading of literary texts in which characters respond courageously to injustice and oppression. Writing assignments—including literary analysis, rhetorical analysis, personal narrative, and creative writing—focus on form, audience, voice, and independence of thought. Grammar and vocabulary instruction build upon previous years and prepare all students for the stylistic expectations of Upper School English. Additionally, students extend their oral communication skills through discussion protocols, group presentations, and individual public speaking opportunities.

- **English II**
  (1 credit; required for class 10; prerequisite: English I)
  English II emphasizes thematic exploration as well as a deeper understanding of language and voice through an assortment of literary works and genres. The literature studied focuses on the ideas of community acceptance, power, and alienation. Personal writing is continued, and analytical writing is emphasized more strongly: students receive instruction in crafting arguable theses; in composing effective introductions and conclusions; and in finding, incorporating, and analyzing appropriate textual evidence. The study of vocabulary and grammar, particularly as used in constructing more sophisticated sentences, continues to be an important part of this course, as it was in English I.

- **AP English Language**
  (1 credit; required for class 11; prerequisite: English II)
  Working from various American literature texts, AP English Language develops the skills enabling students to read closely, think critically, and write cogently. While including other modes, the writing program stresses analytical argument in both timed explications in class and longer essays written out of class, thereby addressing the expectations of the AP English Language exam and preparing students to write the fall semester-ending project and the spring semester-ending synthesis essay, both of which stand in lieu of semester exams. Logical development, textual support, and stylistic clarity are hallmarks of successful AP English Language writing.

- **English IV (H)**
  (1 credit; required for class 12; prerequisite: AP English Language)
  During senior year, students choose from a variety of individual semester-long seminars. While differing in focus and in the material they emphasize, all stress the skills students need to think critically, read closely and write cogently. Class discussion, independent reading and various modes of writing provoke the exploration of sophisticated modes of expression and interdisciplinary topics. In lieu of a final exam, students complete a college-level synthesis paper in the fall. In the spring, culminating assignments include a major paper, presentation, or performance depending on the seminar topic. Seminar offerings change somewhat from year to year, but they have included offerings in Shakespeare, philosophy and literature, Gothic literature, popular culture, memoir, drama, politics and literature, detective fiction, comedy and the Good Life - among others. English IV (H) students will be required to do independent work, to read four to five major literary works per semester, and to write a series of in-class and out-of-class papers totaling approximately 20 to 25 pages.

- **Creative Writing**
  (1/2 credit; fall semester; open to classes 11 and 12; prerequisite: English II)
  This semester-long course explores the art of creative writing, focusing on three major areas: creative non-fiction, fiction, and poetry. After this broad exposure, students will choose a primary area of emphasis for the remainder of the semester. Coursework reinforces the writing process: understanding and stimulating creativity, brainstorming ideas, revising drafts, and establishing a writer’s practice. All students will participate in writers’ workshops to learn both how to give and how to receive constructive editorial assistance.

- **Creative Writing II**
  (1/2 credit; spring semester; open to classes 11 and 12; prerequisite: Creative Writing)
  This semester-long course continues the work begun in Creative Writing with creative non-fiction, fiction, and poetry. Additionally, this course includes an exciting introduction to the art of screenwriting. Students will read screenplays by several of the best practitioners of the art and learn the specific rules and techniques of this popular genre. Once again, students will participate in writers’ workshops to learn both how to give and to receive constructive editorial assistance.
Mathematics

- **Geometry - Functions**
  (1 credit; prerequisite: Algebra I)
  This course is designed to expose students to the structure of geometry while enhancing and strengthening algebraic skills in a geometric context. Areas of study include points, lines, planes, inductive and deductive reasoning, an introduction to proofs, and all properties of geometric figures. Algebra I topics are reintroduced and used with every geometry topic studied in order for students to gain a firmer algebra foundation heading into Algebra II. This course is followed by Algebra II; students who wish to enroll in Algebra II (Adv.) must independently complete summer enrichment and take a Placement Test.

- **Geometry - Euclidean**
  (1 credit; prerequisite: Algebra I)
  This Euclidean geometry course is designed to develop an understanding of a mathematical system, develop powers of spatial visualization, facilitate understanding of coordinate geometry, and enable students to present clearly written, logical proofs. Students will study properties, theorems, and applications relating to lines, triangles, quadrilaterals, polygons, and circles. Deductive reasoning and the role of proof in mathematics are emphasized in this course. This course is followed by Algebra II or Algebra II (Adv).

- **Geometry-Trigonometry (H)**
  (1 credit; prerequisite: Algebra I)
  This honors course begins with all topics covered in the Geometry course. These topics are extended to cover vectors in a plane and their application, laws of sines and cosines, coordinate geometry with conic sections, principles of logic, and advanced topics in trigonometry. This is a demanding course that requires time and effort, and the most successful students in this course will be those who enjoy guided, independent learning. This course is followed by Algebra II-Precalculus (H) or Algebra II (Adv).

- **Algebra II**
  (1 credit; prerequisite: Geometry)
  This course develops and extends the topics presented in Algebra I. New topics introduced include the theory of polynomial functions, logarithmic and exponential functions, linear programming, matrices and determinants, regression, and sequences and series. This course is followed by Precalculus. It is not recommended for students who wish to take Precalculus (Adv). Students who do try to move into Precalculus (Adv) the following year will be required to complete specified work in trigonometry in the summer and pass a placement test over that material before being allowed to enroll in Precalculus (Adv).

- **Algebra II (Adv)**
  (1 credit; prerequisite: Geometry)
  This advanced course will cover all material in the Algebra II course and extend those topics to include advanced topics in the areas of trigonometry and probability. The pace of this class and the depth at which concepts are studied distinguishes this course from Algebra II. This course is less rigorous than the Algebra II-Precalculus (H) course, but it is a demanding course in which more responsibility is given to the students for their individual learning. This course is followed by Precalculus (Adv).

- **Algebra II-Precalculus (H)**
  (1 credit; prerequisite: Geometry-Trigonometry (H))
  This course is a continuation of the Geometry (H) course and it covers all material in the Algebra II courses. Topics are extended to include probability and statistics, mathematical induction, functional analysis, trigonometric functions, equations and identities, limits, and derivatives. Mathematical modeling and concepts from plane, solid, and analytical geometry are included throughout the course. As with Geometry (H), this is a demanding course and the most successful students in this course will be those who enjoy guided, independent learning. This course is followed by AP Calculus BC (Lab) or AP Calculus AB.

- **Precalculus**
  (1 credit; prerequisite: Algebra II)
  This course offers a study of the development of three basic ideas: analysis of functions, including trigonometric functions; mathematical modeling; and the use and analysis of data (including regression and probability). Topics include a study of trigonometry and an introduction to calculus. This course is generally followed by Calculus. It is not recommended for students who wish to take an AP Calculus course the following year.

- **Precalculus (Adv)**
  (1 credit; prerequisite: Algebra II (Adv))
  This course includes an in-depth review of algebraic and trigonometric functions with emphasis on graphing as well as an introduction to Calculus including limits and the definition of the derivative. The pace of this class and the depth at which concepts are studied significantly distinguish this course from Precalculus. This course is normally followed by AP Calculus AB (though a few students take AP Calculus BC and Lab). Students from Algebra II who wish to take this course must complete specified summer work in trigonometry and pass a placement test over that work before being allowed to enroll.

- **Data Analytics**
  (1/2 credit; fall and/or spring; fall or spring semester; open to class 11-12; prerequisite: Algebra II)
  This course is an introduction to a critically important and rapidly growing field, one that underlies most of experimental science, all image processing, corporate strategy projects, and more and more professional sports. The course will be project-based and interdisciplinary, involving elements of math, science, and coding. Students will be introduced to online data sources, determine the data’s reliability, turn the data into a usable form, and analyze results. Examples of some projects using data: how to predict the most dangerous aspect of a hurricane; determine who is the best NBA player of all time; find the best way for an NFL team to spend salary money; how the flu spreads.
Finite Mathematics and Applications
(1/2 credit; fall or spring semester; open to class 11-12; prerequisite: Algebra II)
This course will cover topics in mathematics that prepare students for further studies in managerial, life and social sciences. Students will work individually and collaboratively to formulate and analyze mathematical models using real-world data to better understand complex societal issues. Examples of some of the interdisciplinary topics to be studied: the mathematics of voting apportionment, payday loans, credit cards, and mortgages; the probabilities of gaming and gambling; data analysis of research of opioid use, environmental issues, overseas product manufacturing; analysis using Desmos software, Excel, and graphing calculators. Students will gain more awareness of underlying social and economic dynamics while refining mathematical understanding of matrices as well as exponential, linear, quadratic, and logarithmic models.

Calculus
(1 credit; prerequisite: Precalculus)
This course offers a study of calculus at the non-AP level, with a focus on the applications of calculus to business, management, economics, medicine, and the social sciences. The topics covered include limits, continuity, derivatives, and integrals of algebraic and trigonometric functions with greater emphasis on the algebraic functions. This course prepares students for success in a college calculus course.

AP Calculus AB
(1 credit; prerequisite: Precalculus (Adv) or Algebra II-Precalculus (H))
This course follows the syllabus of the AP Calculus AB exam: topics include functions, graphs, limits, derivatives, and integrals. It is roughly equivalent to the first semester of calculus at most universities. Juniors who take this course may take AP Calculus BC (3D), though some take AP Calculus BC (Lab), or AP Statistics as seniors.

AP Calculus BC and Lab
(1 credit; prerequisite: Algebra II-Precalculus (H) or Precalculus (Adv))
This accelerated mathematics course follows the syllabus of AP Calculus BC using a combination of guided instruction and laboratory exploration. Students will continue to use Desmos graphing software and graphing calculators but will also be introduced to Mathematica software, often used in college mathematics courses. Labs will be used to enhance and refine previously discussed ideas. Students considering this level should love math, be skillful using algebra and precalculus concepts, and come prepared to master a full year of college calculus. For non-seniors, this course is traditionally followed by Differential Equations (H) and/or Linear Algebra (H).

AP Calculus BC (3D)
(1 credit; prerequisite: AP Calculus AB)
In the first semester this course extends the topics from AP Calculus AB to finish the syllabus for the AP Calculus BC exam. The second semester moves into three-dimensional calculus, concluding with Green’s Theorem. It also includes review of first-semester material for the AP exam in May.

AP Statistics
(1 credit; open to class 11 – 12; pre- or co-requisite: Precalculus)
This elective course may be taken at any time after Precalculus or concurrently with Precalculus, though it does not serve as part of the three-course Upper School required math sequence. This course is equivalent to an introductory college-level course in Statistics; it introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Important components of the course include the use of technology for interactive and investigative aspects of data analysis, projects, laboratories, cooperative group problem solving, and writing as a part of concept-oriented instruction.

Differential Equations (H)
(½ credit; fall semester; prerequisite: AP Calculus BC)
This fall course applies the independent-but-guided method of AP Calculus BC (Lab) to the syllabus of typical university-level differential equations courses. There is a three-fold emphasis: solving basic classes and systems of differential equations by hand; use of Mathematica to produce solutions to “real-world” problems; learning how to develop and solve mathematical models of natural and economic phenomena. It requires facility with Mathematica. Students who have completed only an AB Calculus course may be considered for enrollment with the permission of the instructor. This course is traditionally followed by Multivariable Calculus (H).

Multivariable Calculus (H)
(½ credit; spring semester; prerequisite: AP Calculus BC)
This course applies the independent-but-guided method of AP Calculus BC (Lab) to the syllabus of typical university-level multivariable courses. It includes partial differentiation and integration with respect to multiple variables; it culminates with the vector calculus theorems (Green’s, Stokes’, Gauss’s) and the theory of Lagrange multipliers for multi-variable optimization. This course traditionally follows Differential Equations (H), although that course is not a pre-requisite.

Linear Algebra (H)
(½ credit; fall semester; prerequisite: AP Calculus BC)
As a one semester course, Linear Algebra (H) is a survey of the major topics in university-level courses in the subject. Applications and techniques of matrix algebra are stressed. Use of Mathematica is essential throughout the course, as is a high level of comfort with independent learning. Students complete an independent project each quarter, chosen from topics in computer animation, cryptography, topographic modeling, image compression and system modeling/engineering. Linear Algebra (H) may be taken concurrently with Differential Equations (H).

Partial Differential Equations (H)
(½ credit; spring semester; prerequisite: Differential Equations (H))
This course traditionally follows Linear Algebra (H) and continues the general approach of Differential Equations (H). Use of Mathematica is essential throughout the course, as is a high level of comfort with independent learning. Methods of solving partial differential equations (including eigenfunctions and Fourier Series) are addressed in detail. Finite difference
modeling is used to solve problems that cannot be solved analytically. Students complete one or more independent projects each quarter. Students may enroll concurrently with Multivariable Calculus (H) with the permission of the instructor.

- **Complex Analysis I (H)**
  (½ credit; fall semester; Directed Study*; prerequisite: Multivariable Calculus (H))
  This course serves as an introduction to complex analysis. Topics include a review of complex algebra and a brief introduction to complex geometry, followed by an overview of the analysis of complex functions and the Mandelbrot set. The semester ends with a treatment of complex differentiation (including the Cauchy-Riemann equations and analycity).

- **Complex Analysis II (H)**
  (½ credit; spring semester; Directed Study*; prerequisite: Complex Analysis I (H))
  This course is a continuation of Complex Analysis I and includes topics such as complex integration, Cauchy’s formula, residue calculus, and conformal mappings.

*Please see the section on Directed Study later in this guide for additional information about this course format.

**History**

- **Global Issues in Historical Context**
  (1 credit; open to class 9)
  By delving into selected topics from the classical and post-classical eras, students will examine the common challenges faced by societies across place and time. Students will discover that present-day challenges such as state-building, social inequality, and globalization, can be illuminated by the studying the past. Students will learn to critically evaluate information, consider divergent points of view and demonstrate empathy for others. Additionally, students will learn to effectively communicate their ideas and collaborate with others. Ultimately, students will practice the various ways in which historians analyze, evaluate and present information to a wider audience.

- **Modern World History**
  (1 credit; open to class 10)
  This course spans the chronological period from the Renaissance to contemporary times. The independence – and interconnection – of European, Asian, African and American historical developments is emphasized throughout the course. Students analyze global cultural, political, socioeconomic, religious and intellectual trends through teacher instruction as well as independent and collaborative research, examination of primary and secondary sources, and presentations. The ultimate goal of the course is to answer the question: “What forces have shaped the modern world - why is the world the way it is today?”

- **United States History (H)**
  (1 credit; open to class 11, formerly known as United States History which was last offered in 2019-2020)
  United States History (H) is a survey course that sets out to examine the development of four major themes since British colonization: the changing role of government, the United States’ place in the world, the impact of change on society, and what it means to be an American. More importantly though, this course engages students in the intellectual discipline of history; students will routinely employ historical methods, processes, and thinking skills throughout the year. Assessments will focus on reading, writing, listening skills and discussion in a variety of ways. A unique feature of this course is the use of the Harvard Business School Case Study Method Project. Throughout the year, students engage deeply with specific events via the case study method to gain a greater understanding of larger historical trends. Successful completion of this require students to demonstrate mastery of group discussions, in-class essays, independent research projects, and presentations.

- **AP United States History**
  (1 credit; open to class 11)
  AP United States History is an advanced level course that aims to develop in students both an understanding of the content of U.S. History and a mastery of the thinking skills essential to the study of history. This course challenges students to not simply memorize facts about America’s past but to genuinely engage in the analytical work of history. Specifically, students will develop skills associated with chronological reasoning, comparison, contextualization, historical argumentation, and interpretation of historical narratives—all skills that could be called upon in a college-level history course. The development of these skills will occur alongside a thorough exploration of the major themes and facts of U.S. History from 1491 to the present day. Additionally, students will engage in frequent collaborative research assignments as well as class discussions, debates, presentations, and a year-long research project.

- **Economics**
  (½ credit; fall or spring semester; open to class 12)
  This course examines fundamental economic concepts and analyzes the extent of government influence on production, prices, and distribution in different economic systems. It is designed to help students understand how individual and social choices are made in the context of a mixed market economy, and it explores the impact of public policy on such social goals as freedom and equity. The content of the course contains elements of both microeconomics and macroeconomics.

- **History of Art I**
  (1/2 credit; fall semester; open to class 11-12)
  Starting with the Prehistoric cave paintings discovered in Lascaux, France and ending with the majestic marvels of Gothic cathedrals, this semester course will investigate painting, sculpture, architecture, and other forms of visual art produced from 26,000 BCE to the fifteenth century. Though the primary focus is on works of art from western traditions (Europe and the United States), we will set these within a global context, considering also pieces produced in Ancient Egypt, the Near East, Islamic cultures, and Asia. In order to deal with the breadth of material, this class will concentrate on key works of art from each period and culture and identify overarching artistic trends that characterize each of these periods and cultures. Students will learn how to situate works of art within their historical contexts, considering issues of patronage, function, gender, religion, politics, and economics. Additionally, and perhaps most importantly, students will begin discovering works of art and artists that resonate with them.
History of Art II
(1/2 credit; spring semester; open to class 11-12; prerequisite: History of Art I)
This semester course surveys the development of painting, sculpture, architecture, and other forms of visual art from the Italian Renaissance to the present day, focusing particularly on the historical contexts in which these works were created. Though the primary focus is on works of art from western traditions (Europe and the United States), we will situate these within a global context, considering also pieces produced in Asia, South and Central America, and Africa. Through an examination of major artists, movements, and aesthetic issues, students will gain a greater understanding of the relationships between art, politics, and social identity. Additionally, as they hone their ability to think and write critically about art, students will be able to identify and articulate why specific works and artists resonate with them. In order to deal with the breadth of material, this class will concentrate on key works of art from each period and culture and identify overarching artistic trends that characterize each of these periods and cultures. Students will learn how to situate works of art within their historical contexts, considering issues of patronage, function, gender, religion, politics, and economics. Additionally, and perhaps most importantly, students will begin discovering works of art and artists that resonate with them.

History, Geopolitics and Economics of Energy
(½ credit; fall or spring semester; open to class 12)
This senior level history elective examines the rise of the petroleum industry, how it has shaped global affairs, and the ways in which the industry is changing in the face of new technologies, energy sources, and revelations about its impact on the planet. The course will be firmly grounded in history, but will include significant attention to political science, public policy, science, economics, finance, and innovation.

Issues of Justice and Equity in the Twenty First Century
(1/2 credit; fall or spring semester, open to class 11-12)
We will examine contemporary issues of justice and equity including, among other things, same sex marriage and the law, assisted suicide, patriotism, civil dissent and disobedience, abortion, gun control, death penalty, and race relations. The justice and equity issues will be examined through the lenses of utilitarianism, libertarianism, nationalism, economic markets and their moral limits, “just deserts,” and faith and the common good. Primary source material from specific philosophers and/or ethicists such as Plato, Socrates, Augustine, and Epictetus will also be used. Students will spend a portion of each class identifying specific issues in the news that day and choosing one issue to discuss/argue and resolve using principles of justice and equity.

Modern Middle East
(½ credit; fall or spring semester; open to class 12)
This senior seminar examines major Middle East conflicts in their historic contexts. Conflicts often seen as contemporary political disputes have deep historic roots. In this region created from the remains of the Ottoman Empire, states and societies still struggle to create an identity as well as to free themselves from the colonial Western domination that followed World War II. At the same time, they must cope with the necessity of adapting to the demands of the modern world. Regular current event discussions give students an opportunity to apply their historical knowledge to what is occurring in the present. The course also examines policy of the United States in the region. Students will be expected to read both primary and secondary sources and to discuss these sources with classmates and the instructor. Students will finish the semester with a final paper in which they will be expected to analyze and evaluate a current Middle East topic, demonstrating both research and writing skills.

Religion and Politics in America
(1½ credit; fall or spring semester; open to class 11-12)
This course will begin with the colonial period and look closely at the impact of religion on the development of the country into the 21st century. The focus will be a comparative and historical study of the impact of religions on American culture to gain an understanding of the ways in which religion has shaped America. There will be an emphasis on current events and the way 21st Century religious beliefs in America permeate and impact contemporary social, cultural, and political views.

Psychology
(½ credit; fall or spring semester; open to class 12)
This course explores the field of Psychology. The primary focus will be on cognitive processes in broader social contexts. Close attention will be given to early stages of identity, including various developmental theories on learning, intelligence, personality, emotion, motivation, and stress. These theories will be explored through analysis of personal experiences and psychological research of current social trends.

Twentieth Century Revolution and Conflict
(½ credit; fall or spring semester; open to class 12)
The twentieth century is often labeled the “century of revolutions.” With the end of the century, critical questions arose about revolution as a means of social and political change. As a result, students will examine six twentieth century revolutions in order to explore the following questions: What are the causes of revolution? Why do revolutions succeed or fail? Are revolutions a successful means of social change, or do they repeat problems of the past? Have recent global changes left revolutions obsolete? Did the revolutions bring about the changes desired by revolutionaries?

Students will address these questions by examining theories of revolution. We will then consider whether or not these theories are viable by studying concrete cases of revolutionary action. Doing so will allow us not only to understand revolutions but also to grasp the significance of political and social change.

US Government and Politics
(1/2 credit; fall or spring semester; open to class 12)
This one semester course studies the constitutional structure of the United States government. Using current and recent events in American politics, students will analyze the ways in which competing ideologies, election campaigns, political parties, and the media are influenced by and in turn shape the American political system.
World Languages

Most students will have completed Level I of their world language requirement in the Middle School at St. John’s. New class 9 students, upper-class students, and those who wish to begin a new language may enroll in a Level I language course in the Upper School. Placement exams are available for those with prior knowledge of the target language who wish to place out of basic levels.

- **Chinese I**  
  (1 credit; open to class 9-12; prerequisite: none)  
  This course is designed for students with no experience in the language. In the first year of Chinese class, students will develop Chinese conversational skills through basic social interactions. The phonetic system of Pinyin will be introduced as a guide to pronunciation. Basic vocabulary and grammar will be provided for each communication topic at the simplest level. Word processing in Chinese will also be introduced in the first year, as well as student insight into Chinese culture.

- **Chinese II**  
  (1 credit; open to class 9-12; prerequisite: Chinese I)  
  In Chinese II students will further develop their conversational skills of Chinese in basic social interactions. Continued emphasis will be on building high-frequency vocabulary in everyday conversational settings while also improving students’ reading comprehension and writing skills. Students are encouraged to participate in classroom activities and to practice their language skills in and out of class.

- **Chinese III**  
  (1 credit; open to class 9-12; prerequisite: Chinese II)  
  Students will further increase their ability to use Chinese to communicate through speaking, reading, and writing. Students are encouraged to create oral presentations and dialogues to expand their natural use of Chinese. Students will also write short compositions on topics related to personal knowledge, experience, or interest. Students will consolidate their knowledge of the language and their ability to use it and will learn additional grammar and vocabulary as appropriate in context. Students will also explore topics of interest to young individuals, as well as cultural themes.

- **Chinese IV (H)**  
  (1 credit; open to class 9-12; prerequisite: Chinese III)  
  This course is designed for students who have successfully completed Chinese III or equivalent as demonstrated in the placement exam. Students will continue to advance their understanding and fluency in listening, speaking, reading, and writing in Chinese. Students are expected to read and write on a daily basis as communication skills are further developed through class discussions and oral presentations. Many aspects of everyday Chinese culture will be introduced throughout this course. In addition, successful completion of this course will prepare a student for the AP Chinese class for the following school year.

- **AP Chinese**  
  (1 credit; open to class 10-12; prerequisite: Chinese III and/or Chinese IV (H))  
  This class follows the College Board’s Advanced Placement program and is conducted entirely in Chinese. Continued development of speaking and listening skills is achieved through activities such as class discussion, oral reports, literature reading, viewing and listening to authentic materials, and cultural study. Consolidation of grammatical concepts, a strong command of vocabulary and structure, and the ability to converse fluently in various settings are course objectives. Motivated students are highly encouraged to take the AP Chinese Exam. Since this is an AP course, students should expect university level academic expectations and rigor.

- **French I**  
  (1 credit; open to class 9-12; prerequisite: none)  
  In this course we converse almost exclusively in French as soon as possible to acquire the vocabulary and grammar in contextual situations. Brief video materials connected to topics in the text, as well as two serially-presented stories about French teenagers, reinforce listening comprehension in a visually appealing setting. Nightly workbook assignments, as well as periodic longer compositions, help students develop their writing skills. Passages in the text plus additional poems and stories are read and discussed. Student-created skits, Power-Point presentations, contemporary French music, and several feature films enliven language study.

- **French II**  
  (1 credit; open to class 9-12; prerequisite: French I)  
  This course continues the effort to acquire contextually-based vocabulary and grammar in an all-French atmosphere. Much emphasis is placed on grammatical concepts and the acquisition of several new verb tenses in preparation for greater oral and written proficiency necessary in real-life settings. Daily conversational warm-ups, oral slide presentations and in-class skits and dialogues help students hone their speaking skills. A variety of interactive videos and feature films enhance the students’ listening comprehension. The reading program consists of humorous stories from the beloved *Petit Nicolas* as well as French graphic novels and comic books. Written assignments develop grammatical precision through self-expression. The students’ awareness of French culture and civilization grows with this introduction to reading and writing.

- **French III**  
  (1 credit; open to class 9-12; prerequisite: French II)  
  Students in this course become more acquainted with classical French literature (with a close reading of excerpts from Antoine de Saint Exupery’s novel *Le Petit Prince*) as well as francophone history, culture, and geography. Students are expected to research and report on a variety of topics with written submissions and oral presentations and to possess a mastery of grammatical forms (including all verb tenses) by the end of the second semester. Commercial and documentary films, poetry, online news sources and podcasts from the French-speaking world will allow students to better understand several cultural topics, such as French-American relations, francophone identity, colonial history, and French media. This course prepares students for the AP French Language and Culture course.

- **AP French Language and Culture**  
  (1 credit; open to class 11-12; prerequisite: French III)  
  This elective course, conducted entirely in French, uses a variety of authentic literary texts, online news stories, videos and podcasts to prepare students for real-life situations in French-speaking places around the world. Classroom participation is a key component to the
class. Students prepare visually based oral presentations and are expected to conduct all group work in French. Students review advanced grammar and hone their skills through extensive writing assignments, including practicing persuasive essays and personal essays on a variety of theme-based topics. Literature in the class ranges from 16th-century poetry to 21st-century contemporary essays, news articles and spoken word poetry. The selections reflect each of the 6 Global themes assessed on the AP French Language and Culture Exam (Global Challenges, Science and Technology, Contemporary Life, Personal and Public Identities, Family and Community, and Beauty and Aesthetics). Students in this course are prepared to take the AP French Language and Culture examination at the end of the year.

- **French Literature and Civilization (H)**
  (1 credit; open to class 11-12; prerequisites: AP French Language and Culture)
  This course guides students in exploring French and Francophone literature as a window on both literary analysis and historical contexts and events. Reading materials include classic literary texts by authors including Voltaire and Molière and modern authors and movements such as absurdist theater and Existentialism. Students will also read contemporary works and study French films from the New Wave and beyond that blur the line between art and literature. Writing will include analytical essays as well as creative works. Students will continue to develop their listening and speaking skills through seminar-style discussions and a variety of audiovisual material. French is used exclusively in the classroom by both teachers and students. (This course, offered in alternating years with Seminar in French, will be available in 2020-2021.)

- **Seminar in French (H)**
  (1 credit; open to class 11-12; prerequisites: AP French Language and Culture)
  An advanced elective, this course is the culminating experience for French students and it is offered only for those students who have already taken an advance course or for those who have returned from study abroad. The course comprises an important reading program of at least two or three modern short stories, novels, and plays. Ancient myths in modern literature (the myth of Oedipus, the myth of Orpheus, etc.), the myth of Modern Man, and literary trends such as surrealism, existentialism, and absurdist theater and Existentialism. Students will also explore their reading skills and will enjoy the opportunity to study and assess Roman culture through the Romans’ own authentic Latin voice. Students may enroll in AP Latin after having completed the course.

- **Latin I**
  (1 credit; open to 9-12 class; prerequisite: none)
  Latin I is a course designed to introduce students to the basic principles of classical Latin morphology and syntax using the Cambridge Latin Series Units 1 and 2. In addition to the mastery of these basic tools, the course will focus on vocabulary acquisition, and the development of sight translation skills and reading competency necessary to continue successfully into the second year. Latin I provides a basic introduction to the language, literature, history, and culture of the Roman world. This course will not be available in 2020-2021.

- **Latin II**
  (1 credit; open to 9-12 class, prerequisite: Latin I)
  This year will begin with a thorough but well-paced review of all morphology and syntax covered in the Cambridge Latin Series Units 1 and 2. Following this comprehensive review, students will be taken into the realm of more complex syntax and morphology. The texts employed, Cambridge Latin Series Units 3 and 4, continues to build students’ language skills such that at the end of the year they are prepared to read unabridged, authentic Latin texts. The intellect-building, deductive process of language acquisition remains the heart of the course, while also developing mastery of more complex grammar. To make for a more consummate young classicist, lessons will be interspersed with forays into Roman art and archaeology, Roman culture, and Roman history.

- **Latin III**
  (1 credit; open to class 9-12 class, prerequisite: Latin II)
  The first two courses of Latin are dedicated to the mastery of regular morphology (the inflected forms of verbs, nouns, pronouns, and adjectives) and all forms of simple and complex Latin syntax. In Latin III, we make the transition from translating modern-writers’ Latin stories to reading authentic Latin texts from the likes of Eutropius, Caesar, Cicero, Catullus, and Vergil. Latin III also delves more in depth into Roman history and culture by study-ing topics such as Roman epigraphy, numismatics, rhetorical devices, and poetic meter. Students may enroll in Latin IV or AP Latin after having completed the course.

- **Latin IV**
  (1 credit; open to class 10-12, prerequisite: Latin III)
  Latin IV is a reading course offered to students who have completed Latin I, II, and III. The objective of this course is to expose students to a wide range of Latin literary genres, which include the following: drama, history, love, poetry, epic poetry, oratory, philosophy, and satire. Students will focus on developing their reading skills and will enjoy the opportunity to study and assess Roman culture through the Romans’ own authentic Latin voice. Students may enroll in AP Latin after completing this course.

- **AP Latin**
  (1 credit; open to class 10-12; prerequisite: Latin III)
  Students are expected to develop a proficiency in translating Latin texts literally as well learning how to analyze a Latin passage using historical and literary contexts. They will have extensive practice in translating prose and poetry, as well as writing analytical essays using a Latin passage as their primary source. The course will train students to become well-versed with the cultural, social, and political climate in which Caesar’s De Bello Gallico and Vergil’s Aeneid were written. The primary aim of this course is to prepare students for the AP Latin: Caesar & Vergil Advanced Placement Examination. Enrollment in this course is based on teacher recommendation.

- **Ancient Greek**
  (1 credit; open to class 12; prerequisites: successful completion of World Language graduation requirements) (recommended: completion of AP level course or level IV of a language)
  This senior-year elective will introduce students to ancient Greek language and culture. The course will focus on both the rudiments of acquiring the language
in order to read ancient Greek texts and it will also survey important areas of ancient Greek culture. Since Latin and ancient Greek are both inflected languages, this ancient Greek course will be similar to a Latin language course. This course is ideal for any motivated student interested in studying the Classics, Latin, or Greek at the college level. This course is subject to minimum enrollment requirement.

**Spanish I**  
(1 credit; open to class 9-12; prerequisite: none)  
This course is designed to provide a solid foundation in reading, writing, speaking, listening, analyzing and comparing cultural practices, products, and perspectives of various Spanish-speaking countries. The first semester is devoted to vocabulary acquisition and the present tense. The second semester still focuses on vocabulary acquisition while concentrating more on the preterit tense. Students should expect to be actively engaged in their own language learning, become familiar with common vocabulary terms and phrases, comprehend a wide range of grammar patterns, participate in conversations and respond appropriately to conversational prompts, are all components of the class that help reinforce the four basic language skills.

**Spanish II**  
(1 credit; open to class 9-12; prerequisite: MS Spanish or US Spanish I)  
In this intermediate course, students continue to develop conversational and written skills begun in Spanish I. After reviewing the grammatical structures of first-year Spanish, both orally and in writing, students will proceed to study more advanced grammatical structures and usages as they continue to develop their skills in the five major language areas. Readings, compositions, oral presentations, lab work, and online resources are important parts of the course. Student-created skits and videos, presentations, contemporary music in Spanish, and video selections enliven language study.

**Spanish III**  
(1 credit; open to class 9-12; prerequisite: Spanish II)  
This course is designed to develop a greater level of sophistication in the four basic language skills with an emphasis on vocabulary acquisition, grammar review, and advanced grammar. Students will read original literary texts whole or in part. Conversation will be encouraged by assigned paired activities and analysis of particular readings and video clips. Speaking and writing activities will involve topics of various themes. Students will also be introduced to authentic listening tasks. Student-created skits, presentations, contemporary music in Spanish, and several feature films enliven language study. Students may enroll in Spanish IV or AP Spanish Language after having completed the course.

**Spanish IV**  
(1 credit; open to class 10-12; prerequisite: Spanish III)  
This course will focus on developing a greater level of sophistication and accuracy in speaking, listening, reading, and writing in Spanish. In addition to grammar and vocabulary review, new topics in Spanish and Latin American history and culture will be introduced. The students will read several short stories, two adapted novels, and various cultural texts. Conversation will be encouraged by paired/group activities, class discussions, oral presentations, and analysis of the readings and films. Frequent writing and speaking assignments will involve topics suggested by the various textbook themes. Students may enroll in AP Spanish Language and Culture or Seminar in Spanish after completing this course.

**AP Spanish Language and Culture**  
(1 credit; open to class 10-12; prerequisite: Spanish III or IV)  
This is an advanced elective course that is designed for students, who have had a successful experience in Spanish III and/or IV. In order to develop language skills, the course is conducted entirely in Spanish using an integrated approach. All course material includes authentic sources: Spanish language newspapers, radio broadcasts, video clips, movies and literary works. Language and culture are taught through the use of these materials. Grades are based on the students’ ability to read and write the language, as well as their capacity to understand and speak Spanish at an advanced level. Evaluations take many forms throughout the school year. They range from major written examinations to minor exercises in student journals and include individual oral presentations, paired conversations, listening tests and one-on-one evaluations with the instructor among others. Successful completion of this AP course allows admittance to Seminar in Spanish or AP Spanish Literature and Culture.

**Seminar in Spanish**  
(1 credit; open to class 10-12; prerequisite: Spanish IV and/or AP Spanish Language and Culture)  
This elective course is designed for advanced students who seek to improve their fluency (both in speaking and in writing) in Spanish and who have already completed through Spanish IV. This class seeks to improve the students’ understanding of the histories and cultures of our diverse Spanish-speaking world. Seminar in Spanish incorporates the use of films, online articles and literature to cover a diversity of topics in a meaningful context. Please note that most of the films viewed are foreign films; therefore, many are either not rated according to US standards or have a restricted US rating. Parents/guardians will be asked to sign a permission slip allowing their students to view the films.

**Spanish Literature and Culture (H)**  
(1 credit; open to class 11-12; prerequisite: AP Spanish Language and Culture)  
This elective course is the culminating experience for Spanish students. It is designed for advanced students who seek to develop their fluency in written and spoken Spanish. The class is conducted entirely in Spanish. Students will study a wide range of Spanish-speaking authors from Medieval Spain to 20th century Latin America. This course focuses on the literary analysis of the works read: poetry, prose, and drama. Students will engage in intensive conversation practice while analyzing the works as well as develop their essay writing skills in Spanish.
Science

- **Biology I**  
  (1 credit; open to class 9-10)  
  This course provides a scaffolded, inquiry-based learning environment that investigates living systems. Core concepts explored in this course include structure and function from molecular to organisational level, genetic inheritance, and evolution. Learning objectives are achieved in this course through modelling, group discussions, and laboratory experiments. Labs emphasize experimental design and investigation, which helps to form data-driven arguments, and use of scientific language. Lab skills acquired in this course include microscopy, bacterial culture, DNA fingerprinting, use of indicators, probeware, and dissection of specimens.

- **Biology I (H)**  
  (1 credit; open to class 9-10)  
  In this course students will learn about organic molecules, molecular biology, how cells and individuals maintain homeostasis, how cells and individuals reproduce and how populations evolve. Human organ systems and applications of biotechnology are woven into these broader themes. The learning objectives for this course are explored through modelling and group discussion. Labs emphasize experimental design, basic statistical methods, and investigation. Students are expected to independently read, analyze and draw conclusions from texts and their own original lab work. Assessments are developed to allow students to show their deep understanding of the subject and their developing skills in analysis.

- **Chemistry I**  
  (1 credit; open to class 10-11; prerequisite: Biology I)  
  In this course, students work to develop an understanding of states and structure of matter, gases, intermolecular forces, chemical quantities, chemical reactions, periodicity, bonding, aqueous chemistry, electrochemistry, strong acid-base reactions and conceptual thermochemistry. Mathematical models and methods are utilized but conceptual understanding is prioritized. The learning objectives for this course are explored through modelling and group discussion. Students will learn how to safely conduct themselves in the lab setting as well as how to accurately and appropriately collect data. Analysis, results and conclusions are then communicated and assessed by peers and by the instructor. Support will be given to help students develop their inquiry (solving problems through scientific investigation) skills. Assessment includes tests and projects, which are closely linked to instruction.

- **Chemistry I (H)**  
  (1 credit; open to class 10-11; prerequisite: Biology I)  
  In this course, students work to develop a strong conceptual and mathematical understanding of states and structure of matter, gases, intermolecular forces, chemical quantities, chemical reactions, periodicity, bonding, aqueous chemistry, electrochemistry, kinetics, equilibrium, strong/weak acid-base reactions and thermodynamics. The learning objectives for this course are generated during group discussion after an introductory lab experience or activity. Labs involve critical thinking (the ability to carry out systematic thought processes in making decisions and solving problems) and inquiry (solving problems through scientific investigation). Assessment will include questions in which students apply their conceptual and mathematical understanding of material to novel situations.

- **Physics I**  
  (1 credit; open to class 11-12; prerequisite: Biology I)  
  In this course, students work to develop an understanding of waves, optics, mechanics, electricity, and nuclear physics. Topics are addressed in a different order than Physics I (H) to support students’ developing mathematical skills. The learning objectives for this course are explained using physical and mathematical (non-calculus) models. Students gain hands-on experience in these areas with labs and projects that demonstrate practical applications of the course topics. Labs are used to develop specific skills which students then utilize in self-designed investigations. Assessments include quizzes and projects, which allow students to demonstrate their theoretical and practical understanding of the material.

- **Physics I (H)**  
  (1 credit; open to class 11-12; prerequisite: Biology I)  
  In this course, students work to develop an understanding of mechanics (linear and rotational), waves, optics, electricity, magnetism and modern physics. The learning objectives for this course utilize mathematical (non-calculus) models extensively to describe phenomena; students will be expected to construct their own mathematical models. Students perform frequent open-ended lab activities to guide them in developing their understanding. Investigations (student-designed experiments) allow for the demonstration and testing of their understanding and mathematical models. Assessments include questions in which students apply their conceptual and mathematical understanding of material to novel situations.

- **Astronomy**  
  (1 credit; open to class 11-12; prerequisites: prior or concurrent enrollment in Physics I)  
  The structure and evolution of planets, stars, galaxies, and the universe, as well as the methods of astronomy, are emphasized. Planetary science is a major focus of the course, and the most recent exploration and discoveries are discussed. The history of astronomy and of space exploration is interwoven throughout the course.

- **Scientific Methods and Public Policy**  
  (1 credit; open to class 12; prerequisite: Biology I, Chemistry I, Physics I)  
  This year-long lab-based science course focuses on current issues and advances in science and technology. Students investigate the scientific methods and evidence on which public policy is based. Topics will include water, energy sources, climate change and biotechnology. For each topic we will consider myths, reality and solutions as well as policy decisions. Each unit will involve readings, group presentations, lab work, creative reflections, group assignments, written work and debates or projects. Students will be assessed on their knowledge of the scientific principles through quizzes and papers. Laboratory work will include water quality assessment, air quality monitoring, energy use analysis and gene editing/cloning. In the first semester students will research a “Science Policy Controversy” and write an assessment on the current understanding and their recommendations for public policy. The final exam will consist of a project to design real world solutions to concepts studied in class.
Anatomy & Physiology (H)
(1 credit; open to class 11-12; prerequisites: Biology I and Chemistry I)
This course focuses on the structure and function of the human body through the study of tissues, homeostasis, the relationships among systems, and the study of disease. A study of all major human organ systems includes an emphasis on microscopic and macroscopic laboratory activities. Labs include examination of cells and tissues, dissection of the rat and major organs, investigation of case studies, and practice the scientific process in experimental design. Anatomical terminology is practiced throughout the course. Students learn from professionals through guest speakers and field trips. The course is designed for juniors or seniors with an interest in medicine and the allied health fields. The laboratory experience includes a student-designed end-of-year project.

Biological Physics (H)
(1/2 credit; fall or spring semester; open to class 12; prerequisite: Biology I, Chemistry I, Physics I)
This semester-long project-based course approaches advanced physics topics from an applied biological perspective. In this course, students work to deepen their understanding of mechanics, thermodynamics, waves, optics, electricity, magnetism and apply this to biological systems. The learning objectives for this course utilize mathematical models extensively to describe phenomena; students are expected to construct their own mathematical models. Students perform frequent open-ended lab/projects activities to guide them in developing their understanding. Assessments include questions in which students apply their conceptual and mathematical understanding of material to novel situations.

Neuroscience (H)
(1/2 credit; fall or spring semester; open to class 11-12; prerequisite: Biology I)
This one semester, lab-based, advanced biology course will focus on the study of the human nervous system, with an emphasis on understanding the functions of the cells in the nervous system, how the nervous system allows for sensory input and motor output, brain structure and function, pathology, as well as brain plasticity. Understanding of these concepts will be enhanced by a lab curriculum that includes dissections, microscope studies, EMG’s, EEG’s, cranial nerve tests, sensory labs, study of diseases through case studies, field trips, and speakers.

Organic Chemistry (H)
(1 credit; open to class 11-12; prerequisites: Biology I and Chemistry I)
The topics covered in this course will assist students who go on to take a college-level organic chemistry course. This course is recommended for students considering science-related careers in chemistry, biology, medicine, biochemistry, chemical and biochemical engineering, and pharmacology, among others. The course is designed to help students see the role of organic chemicals in their lives. In this course, students are introduced to organic substances: nomenclature, structure, physical and chemical properties, and reactions. Students work in groups to develop organic problem solving strategies. The laboratory portion of the course is designed to develop macro- and micro-scale laboratory techniques as they relate to experiments involving organic materials. Prior or concurrent enrollment in a physics course is highly recommended but not required.

AP Biology
(1 credit; open to class 11-12; prerequisites: Biology I and Chemistry I)
This course generally follows the Advanced Placement syllabus, with particular emphasis on molecular biology, cell biology, genetics, proteomics, evolution and experimental design. Laboratory work is extensive and includes microscopy, column chroma-tography, protein and DNA electrophoresis, bacterial transformation, culturing and staining, and spectrophotometry. Prior or concurrent enrollment in a physics course is highly recommended but not required.

AP Chemistry
(1 credit; open to class 11-12; prerequisites: Biology I and Chemistry I)
AP Chemistry is a course geared toward highly motivated students with interests in chemical and physical sciences. Building on concepts covered in Chemistry I and Chemistry I (H), this course provides students the opportunity to improve and expand upon their skills in science practices and knowledge about chemistry. The AP Chemistry course focuses on a model of instruction which promotes enduring, conceptual understandings and the content that supports them. This is accomplished through inquiry-based learning of essential concepts which helps students develop reasoning skills necessary to engage in the science practices used throughout the course. These include designing a plan for collecting data, analyzing data, applying mathematical routines and connecting concepts in and across domains. Experiments are investigative in nature, and students will spend approximately half of the course time working in the laboratory. The topics considered in this course complete the syllabus for the Advanced Placement examination in Chemistry. Prior or concurrent enrollment in a first year Physics course is highly recommended but not required.

AP Physics II C: Mechanics/Electromagnetism
(1 credit, open to class 12; prerequisite: Physics 1 (H). Prior or concurrent enrollment in AP Calculus BC is required. Concurrent enrollment in AP Calculus AB with approval of Department Chair.)
This second-year physics course is the equivalent of two semesters of calculus-based college physics for science majors. Physics content is strongly integrated with its mathematical description; laboratory investigations and analysis are at the level of college physics courses. Topics in classical mechanics include linear and rotational motion, forces, work/energy, momentum, gravitation and harmonic motion. Topics in Electromagnetism include an in-depth theoretical and quantitative treatment of electric fields, voltage, resistance and current; DC circuits with resistors and capacitors; magnetic fields and forces, circuits with inductance and the generation of electricity. All topics are covered in greater depth and with more detailed analytical and laboratory content than in Physics I or Physics I (H). At the end of the year, students are prepared for both the AP Physics C: Mechanics and E & M exams.

AP Environmental Science
(1 credit; open to class 11-12; prerequisites: Biology I and Chemistry I)
This course is designed to be the equivalent of a one-semester, introductory college course in environmen-
tional science. It will provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. At the end of this course, students should be prepared to take the AP Environmental Science exam. Prior or concurrent enrollment in a physics course is highly recommended but not required.

- **Introduction to Engineering Design**  
  (1 credit; open to Class 9 – 12)  
  This course will introduce students to the Engineering Design Process utilizing the Engineer Your World curriculum developed by The Cockrell School of Engineering at The University of Texas at Austin. The focus will be on students discovering how engineering shapes the world, developing engineering design skills, building engineering habits of mind and exploring engineering fields and professions. The projects include aerial imaging, programming music, designing coffee strengths and reverse engineering products for individuals with special needs.

- **Integrated Engineering Systems (H)**  
  (1 credit; open to class 10-12; prerequisite: Introduction to Engineering Design)  
  This course explores the use of computer technology in the design, function, and control of integrated real-world systems, utilizing the 2nd-year Engineer Your World course developed by The Cockrell School of Engineering at The University of Texas at Austin. The focus is on building a foundation in computational thinking via coding in Python, using the Engineering Design Process to guide the creation of computer-controlled systems, and discovering how advancements in integrated computer systems have transformed the world. Course projects center on the design and construction of integrated electronic/computer systems, such as a simple security device, a motion-capture device used for at-home physical therapy, and an autonomous hospital delivery robot.

- **Engineering Capstone (H)**  
  (1 credit; open to class 11 and 12; prerequisite: Integrated Engineering Systems or Engineering Physics)  
  This course is the capstone course of the Engineering Program, providing students or teams of students the opportunity to pursue independent design projects under the mentorship and guidance of SJS faculty and, when appropriate, industry professionals. The course emphasizes both the engineering design process and the delivery of a successful engineered, tested, and validated outcome. Students combine their engineering skills and experience to first understand the project scope and then to develop conceptual solutions in order to arrive at a prototype design solution that will be presented to and evaluated by a panel of engineering professionals. After successful completion of the prototyping stage, students concentrate on the physical realization and testing of their designs to deliver the engineered, validated final outcome. In addition to the conceptual and technical issues in design that the students face, they learn to navigate the challenges of teamwork, leadership, and project and budget management that are inherent to real-world engineering projects. Throughout the year, students are evaluated on the progress of their project as well as on the extent to which their work leads to a successful project conclusion.

- **Engineering Capstone II (H)**  
  (1 credit; prerequisite Engineering Capstone (H))  
  Engineering Capstone II is a continuation of Engineering Capstone I. Students who have successfully completed Engineering Capstone I will present their Engineering Capstone II proposal to a panel of SJS faculty during the Spring Semester of their Engineering Capstone I course. They will either build upon their Engineering Capstone I project or develop a new proposal. The proposal will be distinguished from Capstone I by higher project requirements, quality of work, industry-level fabrication and manufacturing techniques, and economic viability. Students will continue to work closely with SJS faculty and industry mentors. Depending on the project, off-campus travel may be required. Evaluation methods will closely follow the Engineering Capstone I course. Students will be evaluated on the progress of their project, technical reports, technical presentations, and business plans as well as on the extent to which their work leads to a successful project conclusion.

- **Engineering Physics (H)**  
  (1 credit; open to class 11 and 12; prerequisite: Physics I/Physics I (H) or Integrated Engineering Systems)  
  This advanced project-based course approaches engineering topics from a physics perspective. Students explore various engineering disciplines, using the Engineering Design Process, to create solutions to complex problems. They collaborate on a variety of required class projects as well as individual projects that will allow them to explore topics of interest in depth. The course’s major emphasis is for students to explore emerging technologies. The required projects are based on advanced mechanics, electromagnetism, electronics and robotics.

- **Scientific Research and Design I, II, and III**  
  (½ credit for each year of participation; open to class 10-12; prerequisite: Biology I)  
  This course offers students an opportunity to perform independent scientific research. An interview with the Department Head or SRD teacher is suggested prior to enrollment. Students will first identify a topic for research and read scientific literature to learn what has already been done in the area. Students must write a summary paper and present a PowerPoint of their research to the SRD faculty and students each grading period. Laboratory research is typically done during the summers at a local university, facilitated by a researcher in the field that the student has chosen. Students will be encouraged to enter their research into competitions. Grades for this course will be assigned on a Pass/Fail basis. (This course meets once per rotation.)
Computer Science

- **Computer Hardware & Networking**
  (½ credit; fall semester; open to class 10-12)
This semester course offers a theoretical and practical introduction to the workings of modern and emerging computers, operating systems, peripherals, networks, and business frameworks. Students will learn how to build and repair a computer along with how to design, implement, and troubleshoot on-premise, cloud, and other computer networks. Other topics include network design, various networking topologies, operating systems, transmission media, and various tech business strategies. Successful completion of the course will result in students being able to build, design, and troubleshoot computing systems and to understand, explain, and track tech industry trends.

- **Introduction to Java Programming**
  (1/2 credit; fall or spring semester; open to class 10-12; prerequisite: Geometry or Algebra II)
This is an introduction to object-oriented programming using Java. Anyone interested in taking the Programming Data Structures Honors course should take this class. Basic object-oriented concepts are taught along with classes, methods, conditional statements, loops, strings, single dimensional arrays, and graphical user interfaces. Class work includes programming assignments developed both in and out of class, quizzes, homework, and reading assignments. This class is a prerequisite for Programming Data Structures (H).

- **Programming Data Structures (H)**
  (1 credit; open to class 11-12; prerequisite: Introduction to Java Programming)
This course teaches computer programming concepts and data structures in a variety of languages, including Java and C++. The class is taught at the same level as the first three semesters of computer programming classes students might experience in college. The concepts taught are basic object-oriented program structure, objects, classes, methods, loops, conditional statements, strings, single and multi-dimensional arrays, pointers, stacks, queues, linked lists, trees, binary trees, computer ethics, Big-O notation, growth rate, complexity, program life cycle, and software engineering. In addition, students will gain experience with a variety of languages and will also be able to program in groups as well as solve real world programming problems. Class work includes programming assignments developed both in and out of class, quizzes, homework, and reading assignments.

Fine Arts

- **Two-Dimensional (2D) Studio Art**
  (½ credit; fall or spring semester; open to class 9-12)
This course explores the techniques, materials, and processes involved with the creation of two-dimensional arts. Areas of study will include drawing, painting, print making, and mixed media techniques. Students work in a variety of dry and wet media techniques. The paint mediums will include acrylic and oil on canvas and panel.

  The first quarter will focus on developing the students drawing skills and knowledge. The second quarter will focus on painting skills, color theory, and print making techniques. A variety of concepts will be explored, including figure and portrait, landscape, and abstraction. Students will produce at least three projects each quarter, with six major projects for the semester. The student will be asked to keep a sketchbook for art research practices, subject matter development, and critical thinking skills. 2D and 3D Studio Art classes may be taken as prerequisites for Studio Art II.

- **Three-Dimensional (3D) Studio Art**
  (½ credit; fall or spring semester; open to class 9-12)
This course introduces the student to the techniques, tools, materials, and safety procedures in the fabrication of three-dimensional design. The course will be divided into two units: clay arts and sculpture. In the clay arts area students are introduced to a variety of hand-building techniques such as slab, coil, and modeling. Glazing effects, knowledge of the kiln, and studio safety are emphasized.

  In the sculpture section, the student will explore assemblage, carving, casting and mixed media techniques, including glass fusion and the use of plaster, wire, wood, and other types of materials. Students will produce at least two projects for each unit, with four major projects for the semester. The student will be asked to keep a sketchbook for art research practices, subject matter development and critical thinking skills. 2D and 3D Studio Art classes may be taken as prerequisites for Studio Art II.

- **Studio Art II**
  (½ credit; fall or spring semester; open to class 10-12; prerequisite: 2D and 3D Studio Art* or Architecture)

  Students who have completed either 2D or 3D Studio Art as well as art classes outside of St. John’s may enroll in the course with instructor approval through portfolio review.

  **Studio Art II** is a semester-long course designed for those students interested in developing a portfolio for possible inclusion to college submission. Students who are submitting a portfolio to college are strongly advised to take Studio Art II prior to senior year.

  Students are committed to developing mastery in technique, composition, and concepts as they explore their individual vision through a variety of materials. At the end of the course, students will submit a body of work composed of 3 Breadth artworks, and additional 3 Concentration artworks. The Breadth section of the portfolio is designed to help students build versatility in technique, while the Concentration section of the portfolio expands these skills through an investigation of a theme, concept, and/or style. Both sections are designed to help the student compile a comprehensive portfolio while building an ongoing appreciation and understanding of visual thinking through critical analysis.

  Students are required to commit extra studio time outside of class periods to develop and refine work for this course. The grade is based on quality of individual portfolio work, time and quality of commitment, idea development, and meeting deadlines. The final presentation will be graded as the Final Exam for the course.

- **Architecture**
  (½ credit; fall or spring semester; open to class 9-12)
This course introduces the concepts and techniques of architecture. The class assignments teach drawing,
drafting, and model building skills. Fundamental concepts in architecture are explored (space, scale site, structure, path of movement, functional design, etc.) through studio projects, sketchbook, research, and lectures on architectural history. Houston architectural history, architecture schools, and careers in architecture are explored through field trips and by visiting architects. Through hands-on individual and group design exercises, students will learn fundamental skills of drafting through drawing various architectural plans, developing model building techniques, and exploring 3D rendering tools such as Sketch-Up. Projects involve the use of sustainable architectural practices, residences, parks, and mass transit train stops. Students will present their final designs to the class through presentation board and models. Architecture may be taken as a prerequisite course for Studio Art II.

- **Photography I**  
  (½ credit; fall or spring semester; open to class 9-12)  
  This course introduces the processes, techniques, and skills of photography. Photographic images will be made using digital cameras, and it is optional to use film cameras. Four major projects, Composition, Portraits, Night, and Narrative, are assigned in the course of the semester to help develop compositional skills and to learn basic camera functions. A History of Photography, from invention of the process to the late 20th Century, is discussed and is the material for the course’s Quiz. Students will also maintain an online Flickr photo journal in between major projects. Basic digital photography editing, color balancing, and printing techniques will be introduced. Students need to supply their own digital camera, tripod, card reader, and USB flash drive.

- **Photography II**  
  (½ credit; fall or spring semester; open to class 9-12; prerequisite: Photography I)  
  This course further develops photographic skills in the lighting studio setting and with advanced digital techniques. Digital cameras are still primarily used and required, and film cameras are optional. Four major projects, Studio & Environmental Portraits, Re-Mix (Independent Research), Panoramas, and Digital Alteration, will be utilized to develop more technical, digital, and studio lighting skills. The careers of several important photographers are discussed and are the material for the course’s Quiz. Students will also maintain an online Flickr photo journal in between major projects. Basic digital photography editing, color balancing, and printing techniques will be introduced. Students need to supply their own digital camera, tripod, card reader, and USB flash drive.

- **Music Theory**  
  (½ credit; fall semester; open to class 9-12)  
  This course introduces the fundamentals of music theory. Key signatures (major and minor), construction of major and minor scales, intervals, triad construction, diatonic triads, and resolution of the dominant 7th chord will be included in the course of study. Aural training includes recognition of intervals, scales, and triads, as well as rhythmic and melodic dictation. Introductory 4-part writing, including non-harmonic tones, completes the curriculum.

- **AP Music Theory**  
  (1 credit; open to class 9-12)  
  This course includes all material covered in Music Theory. During the second semester, elements of chromatic harmony are explored, including secondary dominants, scalar variants, modulation, modal borrowing, Neapolitan 6th, and augmented 6th chords. Musical forms, phrase and period structure, and modes are also studied. Aural training includes harmonic dictation. A brief introduction to 20th and 21st century musical elements is presented.

- **Acting I**  
  (½ credit; fall semester; open to class 9-12)  
  This class is performance-based and designed around students being “on their feet,” practicing what they are learning. Students will take the first steps toward understanding and analyzing text to create believable, realistic, naturalistic performances and characters. Monologues and scenes (Shakespeare and contemporary writers will be the focus) will be memorized, rehearsed and performed. Performance “styles” and basic stage combat will also be introduced. Students will be required to do some work outside of class.

- **Acting II**  
  (½ credit; spring semester; open to class 9-12; prerequisites: Acting I)  
  This course continues to build upon the work in Acting I. The focus will be on learning the rudiments of Stanislavsky-based acting methodology, and implementing that methodology in plays encompassing a wide variety of roles, genres, and eras. The course will be performance-based and result in a public performance of scene and monologue work. Students will be required to do some work outside of class.

- **Technical Theatre**  
  (½ credit; fall or spring semester; open to 9 – 12; prerequisite: none)  
  This class focuses on practical application of stage design. Students will study elements of set construction, lighting, sound, and scenic painting; and are expected to complete projects such as flat and platform construction, painting scenic units, and operating the sound and light boards. The final will be to present a completed scenic design with technical drawings, and color selections. Students will be required to do some work outside of class.

- **Digital Applications in Video I**  
  (½ credit; fall or spring semester; open to class 9 – 12)  
  This course covers the basics of how a movie is made and how a movie’s elements are critiqued. Students will learn how to create and alter digital video with Adobe Premiere, capturing video clips, applying special effects, and mixing audio. There will be an in-depth look at digital audio manipulation through programs such as Adobe Audition. Other programs that are introduced are Adobe Photoshop and Microsoft PowerPoint.

- **Digital Applications in Video II**  
  (½ credit; fall or spring semester; open to class 9 – 12; prerequisite: Digital Applications in Video I)  
  This course succeeds Digital Applications I and requires its successful completion (or equivalent) for enrollment. It focuses on more advanced elements of script and film production. Students learn how to create longer and more polished videos on a variety of subjects. Students will also receive a hands-on study of live video production. A final project demonstrating mastery of all the course elements is required of all students.
Performing Ensembles

The following non-graded courses count toward the Fine Arts requirement and meet three academic carriers each rotation unless otherwise stated. Most ensembles require an audition for enrollment. A full year’s enrollment in each music ensemble and Caprice I meets one-half the Fine Arts requirement. All other dance ensembles (Caprice II, Caprice III, and Terpsichore) fulfill the Fine Arts requirement. Performing ensembles are graded on a pass/fail basis where Pass (P) is equivalent to a 70 or above.

- **Choir**  
  (½ credit; year long; open to class 9 – 12)  
  Chorale (a large mixed choir), Kantorei (a small select chamber choir), and Les Chanteuses (9th & 10th grade treble choir) are performance-based ensembles that teach vocal production, musicianship skills, and musical style interpretation through the study and performance of a varied repertoire of choral literature. All choirs are open by audition. Kantorei members are also required to be members of Chorale.

- **Wind Ensemble**  
  (½ credit; year long; open to class 9 – 12)  
  This course offers performance and instructional opportunities for students with previous experience playing a woodwind, brass, or percussion instrument. The ensemble concentrates on original compositions of the 18th – 20th centuries. Master classes and workshops are offered to bring the students into contact with expert instrumental artists.

- **Jazz Band**  
  (½ credit; year long; open to class 9 – 12)  
  This course is designed for students who have experience playing brass, woodwind, drums, guitar, bass, or piano and who would like to expand their abilities in the jazz and popular media. Emphasis is placed on developing sight-reading skills, playing as an ensemble, and learning jazz phrasing and improvisational techniques. This ensemble is open by audition. Jazz Band members are required to be members of the Wind Ensemble.

- **String Ensemble**  
  (½ credit; year long; open to class 9 – 12)  
  There are two levels of string orchestras at St. John’s. Philharmonia is open to any student with experience playing an orchestral stringed instrument. It offers instruction on string technique and string orchestra music, and performs in concerts together with Chamber Strings. Chamber Strings is a select ensemble by audition that, in addition to the repertoire performed with Philharmonia, will play music from the standard string orchestra repertoire as a separate ensemble. In addition to music from the string repertoire, the orchestras will perform choral orchestral works.

- **Dance**  
  (credit varies; year long; open to class 9 – 12)  
  Open to all students, dance ensembles offer performance-based classes with focus on technique and choreography. The classes provide a cumulative study of Ballet, Modern/Contemporary, and Jazz dance with the rehearsal process incorporated into the class throughout the year. A placement class is required to determine the appropriate technical level of each student (Caprice I, Caprice II, Caprice III and Terpsichore). Caprice I meets during the ensemble period four times per rotation while Caprice II, Caprice III, and Terpsichore meet during academic carriers five times per rotation. Participation in Dance may fulfill the PE requirement. After the PE requirement is met, participation in Caprice I earns 1/2 Fine Arts credit while Caprice II, Caprice III and Terpsichore Ensembles earn one credit.

Independent Study Project

The Independent Studies Project is designed to allow disciplined and self-motivated students in classes 10-12 to pursue an area of study of personal interest in different areas or in greater depth than the standard curriculum allows. Projects may be for one semester or for the entire year and are assessed on a Pass/Fail basis; year-long and fall-semester projects require a successful mid-semester presentation in order to continue. All ISPs require a public presentation, followed by a question-and-answer session, at the end of the project. For further information, see the School’s website and the program director, Dr. Raulston.

Directed Study

Some courses normally offered in a classroom setting may be available for credit on a Directed Study basis. In a Directed Study, the student assumes the majority of the responsibility for completing the objectives of the course with some support and guidance from the teacher. Directed Study courses are not intended to replicate the classroom experience but are expected to be comparable in breadth, depth, rigor, and workload to the classroom version of the course. Students are expected to demonstrate mastery through quizzes, tests, papers, etc. as determined by the teacher of the course.

A student must have permission from the teacher of the course, the department chair, and the academic dean. Directed Studies will not be permitted when the course is offered during the semester, and it is possible for the student to enroll. Only juniors or seniors are eligible for Directed Study. A student may not participate in more than one Directed Study at a time. The course and grade will appear on the student’s transcript with a note that the course was taken as a Directed Study.