

PUTNAM SCIENCE ACADEMY

PROGRAM OF STUDIES 2023-24



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Note:

In alignment with the mission of the school, Putnam Science Academy offers a comprehensive program of studies. Final decisions regarding the actual offering of any particular course for the upcoming school year will depend upon enrollment and budget constraints. Therefore, not all courses listed in this catalog are guaranteed to run every school year.

INTRODUCTION

This course catalog is a reference manual for students, parents, and faculty at Putnam Science Academy. It serves as a guide to the 2022-23 course offerings at Putnam Science Academy.

Planning an individual student's high school program of studies requires communication between all stakeholders: students, parents, guidance, and the instructional staff at PSA. Beyond fulfilling graduation requirements, students are encouraged to select courses that will challenge them academically as well as serve as a way to discover one's passion for career aspirations.

College Bound Athletes:

The Guidance Department at PSA will examine all transcripts to ensure that students who aspire to be athletes at the undergraduate level of play fulfill all NCAA requirements prior to graduation. The following are a list of NCAA approved courses at PSA:

AMERICAN LITERATURE - COLLEGE	EUROPEAN HISTORY
AMERICAN LITERATURE - HONORS	GOVERNMENT
AP/ENGLISH 3 LANG & COMP	HONORS SOCIAL SCIENCE
AP/ENGLISH 4 LIT & COMP	INTRODUCTORY COLLEGE UNITED STATES HISTORY
BRITISH LITERATURE - COLLEGE	MODERN WORLD HISTORY - HONORS
BRITISH LITERATURE - HONORS	PSYCHOLOGY
CREATIVE WRITING & COMPOSITION - COLLEGE	UNITED STATES HISTORY
CREATIVE WRITING & COMPOSITION - HONORS	US HISTORY
INTRODUCTION TO LITERATURE - COLLEGE	WORLD HISTORY 1
INTRODUCTION TO LITERATURE - HONORS	WORLD HISTORY 2
WORLD LITERATURE - COLLEGE	AP STATISTICS
WORLD LITERATURE - HONORS	ALGEBRA & TRIG
ADVANCED PLACEMENT WORLD HISTORY	ALGEBRA 1
AP EUROPEAN HISTORY	ALGEBRA 2
AP MACROECONOMICS	AP CALCULUS AB
AP MICROECONOMICS	AP CALCULUS BC
AP PSYCHOLOGY	CALCULUS
AP US GOVERNMENT & POLITICS	GEOMETRY
AP US HISTORY	H CALCULUS
CIVIL RIGHTS	PRECALCULUS
COLLEGE WORLD HISTORY SINCE 1945	STATISTICS
CURRENT ISSUES	STATISTICS & DISCRETE MATH
ECONOMICS	TRIGONOMETRY & FUNCTIONS
	ANATOMY & PHYSIOLOGY
	AP BIOLOGY 2
	AP PHYSICS 1
	AP CHEMISTRY 2
	AP PHYSICS 2

BIOLOGY	H MANDARIN 4
CHEMISTRY	H RUSSIAN 4
ENVIRONMENTAL SCIENCE	H SPANISH 4
INTEGRATED SCIENCE	MANDARIN 1
PHYSICAL SCIENCE	MANDARIN 2
PHYSICS	MANDARIN 3
AP FRENCH 5 LANG & CULT	RUSSIAN 1
AP MANDARIN 5 LANG & CULT	RUSSIAN 2
AP SPANISH 5 LANG & CULT	RUSSIAN 3
FRENCH I	SPANISH I
FRENCH II	SPANISH II
FRENCH III	SPANISH III
H FRENCH 4	

GRADUATION AND GRADING POLICY

Graduation Requirements:

To participate in graduation exercises, Putnam Science Academy students must earn a minimum of 24 credits in Grades 9-12 and must include the following credit distribution:

Diploma Credit/Distribution Requirements:

English	4
Mathematics	3
Science (w/Lab)	3
Social Studies	3
World Language	2
Electives (comp/art/PE/etc)	9

***Note: Beginning with the Class of 2025, students must also earn 2 credits in Visual Arts.**

College Entrance Requirements:

****Post graduate students who complete program requirements are issued a completion certificate.**

Minimum graduation requirements should not be confused with college/university admission requirements. The general rule of thumb for most four-year colleges/universities is that applicants should have completed a minimum of 4 units in English, 3 units in math, science, social studies, and world languages while top colleges recommend a minimum of 20 units, 4 units in each subject. (Academic units are considered to be full year courses in college preparatory courses in English, math, science, social studies, and world languages.)

GPA Calculation: Weighted GPA:

Putnam Science Academy weights the courses to calculate the grade point average (GPA).

GPA is calculated internally by using the following GPA scales:

AP Course:	5.0
Honor Course:	4.5
College Prep Course:	4.0

GPA Calculation: Class Rank Policy:

Students who transfer in from another school must have been a student at Putnam Science Academy for at least **two** school years to be considered eligible for the honors of valedictorian and salutatorian upon completion of their senior year.

Grading Scale:

Letter Grade	Range	GPA
A+	96 - 100	4.0
A	93 - 95	3.8
A-	90 - 92	3.6
B+	86 - 89	3.4
B	83 - 85	3.2
B-	80 - 82	3.0
C+	76 - 79	2.6
C	73 - 75	2.3
C-	70 - 72	2.0
D+	66 - 69	1.6
D	63 - 65	1.3
D-	60 - 62	1.0
F	0 - 59	0.0

Important Scheduling Deadlines:

Adding/Dropping classes:

Remember, all students must maintain a minimum course load of 7 credits per year.

- The last day to add/drop a first semester class or a year long course is by the third Friday of the first quarter.
- The last day to add/drop a second semester class is by the third Friday of the third quarter.

Note: Under special circumstances, such as a teacher's dissatisfaction with the student, the administration has the right to drop a student from a year long course at the end of the first quarter.

A student who withdraws from any course prior to the above deadlines will be removed from the class roster and no record of this withdrawal will appear on the student's permanent record. A withdrawal after the deadline will receive a record of Withdraw Pass (WP) or Withdraw Fail (WF) on the student's permanent transcript.

A student taking a college course should ask the college to send a transcript to the College Counseling Office at Putnam Science Academy if the student would like the course to be shown on the PSA transcript.

Instructional Levels:

Courses at Putnam Science Academy may be offered in three different academic levels. Courses are appropriately designed for students who have demonstrated corresponding levels of achievement, performance, and interest.

College Prep

Our College Prep curriculum is designed to intellectually challenge and continue the academic development of the majority of students who have made satisfactory progress to date.

Honors

The Honors curriculum moves at an accelerated pace through the course material and includes especially challenging assessments. These courses are designed for students who have demonstrated excellent proficiency in reading, writing and/or mathematics, who can work well with abstract ideas, and who can independently manage a challenging academic workload.

Advanced Placement

Advanced Placement (AP) courses provide opportunities for students to take college level classes as well as the potential to earn college credit. Students should only take these classes if they demonstrate college level skills in reading, writing and/or mathematics, as well as have a commitment and a desire to work at the highest academic level of study at PSA. Students who take an AP level course must also take the annual AP exam for that course.

ENGLISH COURSES

Introduction:

The English Department has a strong focus on composition and literature while instilling cooperative learning and oratorical skills in students. Our emphasis in composition is to assist students in writing honestly and developing styles with their authentic voice. Emphasis is placed on personal, technical, and analytical forms of writing. Literary analysis is a major concentration with special attention to meaningful, personal involvement with the literature. Our curriculum is designed to acquaint each student with the major cultural and aesthetic movements of American Literature and British Literature with special attention given to the voices of women, persons of color, and non-western writers.

Introduction to Literature - College Prep

Credits: 1

Prerequisite: None

This course builds upon students' prior knowledge of grammar, vocabulary, word usage, and the mechanics of writing and usually includes the four aspects of language use: reading, writing, speaking, and listening. This course introduces and defines various genres of literature, with writing exercises often linked to reading selections. Emphasis is placed on strengthening needed vocabulary, grammar, and writing skills. The completion of frequent writing assignments is an expectation. Literature is an important component; therefore, students should expect a substantial amount of reading. They will be exposed to the genres of mythology, classical literature, and contemporary fiction. *Romeo and Juliet*, *Lord of the Flies*, *The Odyssey*, and *Of Mice and Men* may be among the titles chosen. In addition to these readings, an anthology will be utilized. A formal research project will be assigned.

Introduction to Literature - Honors

Credits: 1

Prerequisite: A minimum grade of B+ in eighth grade English

This course builds upon students' prior knowledge of grammar, vocabulary, word usage, and the mechanics of writing and usually includes the four aspects of language use: reading, writing, speaking, and listening. This course introduces and defines various genres of literature, with writing exercises often linked to reading selections. This course concentrates its study on the major literary forms, vocabulary development, and grammar. The literary emphasis is placed on analysis of the form, content, and style of the short story. Other major genres considered in detail are the epic, novel, and drama. Works studies may include *The Odyssey*, *Great Expectations*, *Tale of Two Cities*, *Maus I and Maus II*, *Of Mice and Men*, *A Separate Peace*, *Lord of the Flies*, and *Romeo and Juliet*. Etymology supplements the formal study of college-level works and those reflected from literature in the development of vocabulary skills. Grammar is taught formally, on an individualized basis, and through various writing assignments. Special emphasis is placed on phrases, causal relationship, sentence structure, and study skills. The writing of formal research papers will be addressed.

World Literature - College

Credits: 1

Prerequisite: Successful completion of *Introduction to Literature* or *Departmental approval*

This course offers a balanced focus on composition and literature. Typically, students learn about the alternate aims and audiences of written compositions by writing persuasive, critical, and creative multi-paragraph essays and compositions. Through the study of various genres of literature, students can improve their reading rate and comprehension and develop the skills to determine the author's intent and theme and to recognize the techniques used by the author to deliver his or her message. World Literature uses representative literature selections from ancient and/or modern times from countries around the world. Students improve their critical-thinking skills as they comprehend the diversity of literary traditions and the influences of those traditions. Oral discussion is an integral part of literature courses, and written compositions are often required. Literature studied may include such titles as *Oedipus Rex*, *Lord of the Flies*, *Of Mice and Men*, *The Glass Menagerie*, and *Julius Caesar*.

World Literature - Honors

Credits: 1

Prerequisite: A minimum grade of B- in *Honors Introduction to Literature* or a minimum grade of A- in *Introduction to Literature* and *Departmental approval*.

Honors World Literature uses representative literature selections from ancient and/or modern times from countries around the world. Students improve their critical-thinking skills as they comprehend the diversity of literary traditions and the influences of those traditions. Since Honors World Literature represents the last molding stage of student growth in language skills (i.e. grammar, sentence structure, composition, vocabulary, reading, and other related areas), the curriculum is carefully developed in an effort to prepare students to meet the more in depth requirements of upper level English courses. There is a heavy focus on literary analysis and students will read widely and deeply. Numerous genres are taught, including drama, short stories, non-fiction, novels, and poetry. Works studied may include *Animal Farm*, *To Kill a Mockingbird*, *1984*, and *Julius Caesar*. There is also a strong emphasis on writing, therefore students should be prepared to improve and enhance their skills in composition.

American Literature - College

Credits: 1

Prerequisite: Successful completion of *World Literature* or *Departmental approval*

American Literature continues to develop students' writing skills, emphasizing clear, logical writing patterns, word choice, and usage, as students compose essays and research papers. Literary conventions and stylistic devices may receive greater emphasis than in previous courses of study. American Literature focuses upon commonly known American authors and their work. Examples include but are not limited to Hemingway, Miller, Poe, and O'Neill. There will be continuous emphasis on vocabulary building as a corollary to required reading. Students will improve their critical-thinking skills as they determine the underlying values of how each work

of literature reflects the society of the time.

American Literature - Honors

Credits: 1

Prerequisite: *A minimum grade of B- in Honors World Literature or a minimum grade of A- in World Literature and Departmental approval.*

Honors American Literature examines the main literary genres of significant works of American Literary Art which parallel US History. Students taking Honors American Literature are exposed to and urged to express the American literary spirit. Subtext and critical thinking skills are addressed and an emphasis is put on obtaining an understanding of how to apply what students have learned. A variety of mediums are addressed including, short story, plays, and poetry writing. Major works that are covered include *The Crucible*, *Fahrenheit 451*, *The Catcher in the Rye*, *The Things They Carried*, *The Great Gatsby*, and *The Scarlet Letter*. Students will improve their critical-thinking skills as they determine the underlying values of how each work of literature reflects the society of the time.

British Literature - College

Credits: 1

Prerequisite: *Successful completion of American Literature or Departmental approval*

This course blends composition and literature into a cohesive whole as students write critical and comparative analyses of selected literature, continuing to develop their language arts skills. Typically, students primarily write multi-paragraph essays, but they may also write one or more major research papers. British Literature will study the works of celebrated British authors, such as Chaucer, Shakespeare, Keats, Shelley, Yeats, Swift, Wilde, Orwell, the Bronte sisters, etc. Societal influences on their writing will also be examined. Oral and written presentations will be an integral part of this course. The study of grammar will arise from needs identified in student's written work. The student selecting this course will have a very good background in British Literature, the mechanics of grammar, and writing. The class will cover British Literature from the Anglo-Saxon period up to contemporary works. Students are provided with the contextual history of each literary period and work so that they may make the connections between the works and the times in which they were written.

British Literature - Honors

Credits: 1

Prerequisite: *A minimum grade of B- in Honors American Literature or a minimum grade of A- in American Literature and Departmental approval.*

This course is a challenging study of British Literature. This course blends composition and literature into a cohesive whole as students write critical and comparative analyses of selected literature, continuing to develop their language arts skills. Typically, students primarily write multi-paragraph essays, but they may also write one or more major research papers. The class

shall approach the works chronologically and consider the influence of the evolving British culture on language, discourse, and literary styles. Students will study works by Chaucer, Shakespeare, Blake, Keats, Shelley, Milton, Swift, Wilde, and Huxley. Reporting orally and writing will be integral parts of this course. Additionally, grammar shall be addressed through the needs identified in student writing. Students taking this course need to be capable of maintaining intensive reading and writing projects as well as have the capacity to deliver well developed oratories. This class covers British Literature from the Anglo-Saxon period up to contemporary works. Students are provided with the contextual history of each literary period and work so that they may make the connections between the works and the times in which they were written. A heavy focus is placed on student's abilities to understand the subtext of various works and how these works fit into history both in the time they were written and today. Critical thinking skills are also a key to this classroom and students are constantly challenged to find characters' motivations and the reasons behind why certain themes exist. Key works in the class include: Beowulf, The Canterbury Tales, Hamlet, Frankenstein, Brave New World and Dracula. Other material includes excerpts from Paradise Lost, Gulliver's travels and a wide assortment of British poetry.

AP/ English Language & Composition

Credits: 1

Prerequisite: Successful completion of Honors World Literature with a minimum grade of B and Departmental approval.

Following the College Board's suggested curriculum designed to parallel college-level English courses, AP English Language and Composition exposes students to prose written in a variety of periods, disciplines, and rhetorical contexts. This course will provide students with workload challenges consistent with an undergraduate English composition course. This course emphasizes the interaction of authorial purpose, intended audience, and the subject at hand, and through them, students learn to develop stylistic flexibility as they write compositions covering a variety of subjects that are intended for various purposes. Students entering AP English are already skilled in basic composition, and are proficient in their use of standard English grammar and mechanics. Expected in this course is refinement of these skills to develop sophistication and stylistic maturity in writing. Focus is on a variety of writing genres, particularly the synthesis, argumentative, and analytical essay. There is also a heavy focus on the study of rhetoric, defined as the art of discourse, an art that aims to improve the facility of speakers and writers. The course emphasizes critical reading of various prose styles, with a heavy emphasis on nonfiction. This is a yearlong course, which is designed to prepare students for the Advanced Placement Exam given in May.

AP/English Literature & Composition

Credits: 1

Prerequisite: Successful completion of Honors American Literature, with at least a grade of a B and Departmental approval.

Following the College Board's suggested curriculum designed to parallel college-level English courses, AP English Literature and Composition enable students to develop critical standards for

evaluating literature. Students study the language, character, action, and theme in works of recognized literary merit; enrich their understanding of connotation, metaphor, irony, syntax, and tone; and write compositions of their own (including literary analysis, exposition, argument, narrative, and creative writing). An AP course in English Language and Composition engages students in becoming skilled readers of prose written in a variety of rhetorical contexts, and in becoming skilled writers who compose for a variety of purposes. Both their writing and their reading should make students aware of the interactions among a writer's purposes, audience expectations, and subjects, as well as the way genre conventions and the resources of language contribute to effectiveness in writing. This is a yearlong course, which is designed to prepare students for the Advanced Placement Exam given in May.

Film Studies

Credits: 1

***Prerequisite:** A minimum grade of B- or higher in a prior English Literature course.*

This course will serve as an introduction to film appreciation and production. Students will view a selection of films and analyze the aesthetic elements including cinematography, editing, sound, script, acting, direction, and mise en scene. In addition, students consider the context in which a film was created, and how elements such as cultural roles, genre, political issues, economics, ethics, and history influenced the film. Students will engage in analysis and actively participate in class discussion. In addition they will engage in writing critical reviews, and conducting research. Students will create at least one short film of their own.

Writing Composition

Credits: 1

***Prerequisite:** A minimum grade of B- or higher in a prior English Literature course and teacher recommendation.*

This course focuses on students' writing skills and develops their ability to compose different types of papers for a range of purposes and audiences. Writing Composition course enables students to explore and practice descriptive, narrative, persuasive, or expository styles as they write paragraphs, essays, letters, applications, formal documented papers, or technical reports. Although composition courses may present some opportunities for creative writing, their focus usually remains on nonfiction, scholarly, or formal writing.

Public Speaking

Credits: 1

***Prerequisite:** A minimum grade of B- or higher in a prior English Literature course.*

Public Speaking courses enable students, through practice, to develop communication skills that can be used in a variety of speaking situations (such as small and large group discussions, delivery of lectures or speeches in front of audiences, and so on). Course topics may include (but are not limited to) research and organization, writing for verbal delivery, stylistic choices, visual and presentation skills, analysis and critique, and development of self-confidence. Students will also listen to speeches and experiment with different styles, rhythms, and formats. Oral

presentations and written work are required on a weekly basis. Students will learn and gain skills to speak confidently and convincingly in public.

Creative Writing and Composition - College

Credits: 1

***Prerequisite:** A minimum grade of B- or higher in a prior English Literature course and Departmental approval.*

The Creative Writing course offers students the opportunity to develop and improve their technique and individual style in poetry, short story, drama, essays, and other forms of prose. The emphasis of the courses is on writing; however, students may study exemplary representations and authors to obtain a fuller appreciation of the form and craft. Although this course mostly covers several expressive forms, classes will sometimes concentrate on particular forms such as poetry or playwriting.

Journalism

Credits: 1

***Prerequisite:** A minimum grade of B- or higher in a prior English Literature course and Departmental approval.*

Journalism courses are usually associated with the production of a school newspaper, yearbook, or literary magazine and emphasizes writing style and technique as well as production values and organization. Journalism courses introduce students to the concepts of newsworthiness and press responsibility; develop students' skills in writing and editing stories, headlines, and captions; and teach students the principles of production design, layout, and printing. Photography and photojournalism skills may be included.

MATHEMATICS COURSES

Introduction:

The purpose of the Mathematics Department is to provide a sound, contemporary, and comprehensive mathematics curriculum that offers each student an opportunity to realize their potential as a critical and logical thinker. The department strives to provide experiences that stress the concepts and skills necessary for success in the twenty-first century. The Mathematics Department provides a program of courses to fulfill the needs of students with varied interests and abilities. The choice of courses allows the student to be challenged and successful as well as to approach mathematics with confidence. While we want students to reach their academic potential, we do not want students to be enrolled in a course that is inappropriate. In order to determine the best course, students should consult with their present mathematics teacher, their guidance counselor, and their parents. All of our courses include investigation so that the use of either a calculator or computer technology is an integral component. Students taking Algebra 2 and higher level courses must have a TI-NSPIRE CX CAS graphing calculator.

Pre-Algebra

Add Course Description

Algebra 1 - College

Credits: 1

***Prerequisite:** Completion of Pre-Algebra or equivalent.*

Algebra 1 includes the study of properties and operations of the real number system; evaluating rational algebraic expressions; solving and graphing first degree equations and inequalities; translating word problems into equations; operations with and factoring of polynomials; and solving simple quadratic equations.

Honors Algebra 1

Credits: 1

***Prerequisite:** Completion of Pre-Algebra or equivalent with a minimum grade of A- or Departmental approval.*

Honors Algebra 1 is a rigorous course, which covers all the topics of Algebra I, with additional emphasis on the more complex theorems. A student who chooses this course should be aware that the range of topics is more in depth than and taught at a faster pace.

Geometry - College

Credits: 1

***Prerequisite:** Completion of Algebra I*

Geometry includes topics such as properties of plane and solid figures; deductive methods of reasoning and use of logic; geometry as an axiomatic system including the study of postulates, theorems, and formal proofs; concepts of congruence, similarity, parallelism, perpendicularity, and proportion; and rules of angle measurement in triangles.

Honors Geometry

Credits: 1

***Prerequisite:** Completion of Algebra I with a minimum grade of A- or above or Departmental approval*

Honors Geometry is a rigorous course, which covers all the topics of geometry, with additional emphasis on the more complex theorems of solid geometry. The nature of geometric proofs is emphasized. A student who chooses this course should be aware that the range of topics is more in depth than and taught at a faster pace.

Algebra 2 - College

Credits: 1

***Prerequisite:** Completion of Geometry*

Algebra 2 with Trigonometry course combines trigonometry and advanced algebra topics, and are usually intended for students who have attained Algebra 1 and Geometry objectives. Topics typically include right trigonometric and circular functions, inverses, and graphs; trigonometric identities and equations; solutions of right and oblique triangles; complex numbers; numerical tables; field properties and theorems; set theory; operations with rational and irrational expressions; factoring of rational expressions; in-depth study of linear equations and inequalities; quadratic equations; solving systems of linear and quadratic equations; graphing of constant, linear, and quadratic equations; and properties of higher degree equations.

Honors Algebra 2

Credits: 1

Prerequisite: *Completion of Geometry with a grade of B+ or above*

Honors Algebra 2 is a rigorous course, which covers all the topics of standard Algebra II. Additional emphasis is placed on the concepts of functions, analysis, conics, logarithmic and exponential functions, and matrices. A student who chooses this course should be aware that the range of topics is more in depth than and taught at a faster pace.

Trigonometry & Functions

Credits: 1

Prerequisite: *Completion of Algebra II and Departmental approval.*

This course is an intermediate course in mathematics for the student who has completed Algebra 2 and Geometry and wishes to strengthen their mathematical background. This course is for those students who are not recommended to take Precalculus. The course offers a review of algebraic and geometric concepts, a preview of precalculus topics, and an introduction to discrete mathematics. In addition, special attention will be given to the study of the basic elementary functions: trigonometry, exponential and logarithms. The TI-Nspire graphing calculator (or equivalent) will be used in this course.

Precalculus

Credits: 1

Prerequisite: *Completion of Algebra 2 with a minimum grade of B and Departmental approval.*

This course is an intermediate course in mathematics for the student who has completed Algebra II and Geometry. The course offers enhanced material to promote deeper understanding of mathematical concepts including functions, polynomial functions, exponential and logarithmic functions, trigonometry, and matrices and determinants. The TI-Nspire graphing calculator (or equivalent) will be integrated throughout this course. This course will better prepare students for higher-level courses upon entering college.

Statistics OR Statistics & Discrete Math

Credits: 1

Prerequisite: *Completion of Algebra 2 with a minimum grade of B-*

Foundations of Precalculus or Precalculus may be taken concurrently. This course would serve as a non-rigorous first course in statistics, data analysis and probability with a strong emphasis on applications and the thinking behind data gathering and interpretation, rather than on theory and computation. (This course is not intended to prepare students for the AP exam in Statistics.) Students will learn about statistics and data by working with data. The use of graphing calculators will be incorporated throughout the course. This approach reflects the way real-life statisticians contribute to our understanding of the world. It will also help students be more discerning consumers of statistics, teaching them to look closely at what the numbers from surveys, election polls, and medical studies are really saying.

Analysis

Credits: 1

Prerequisite: *Completion of Algebra 2 with a minimum grade of B+*

Analysis is a rigorous precalculus based course that recognizes the importance of developing solid mathematical computational and problem-solving skills. Students taking this course will explore the behaviors of a diverse family of functions such as quadratic, polynomial, logarithmic, exponential, trigonometric, and circular. Also covered in this course is a deep and extensive application of trigonometry, in proof and in problem solving, such as vectors, parametric equations and motion, polar curves, and De Moivre's Theorem. Additional topics include systems & matrices, sequences & series, and an introduction to limits and derivatives. The use of graphing calculators is required in this course as they are used extensively to profile and model the behaviors of the functions we will be studying.

Calculus

Credits: 1

Prerequisite: *Completion of Precalculus and Departmental approval.*

This course is a higher-level course in mathematics for those students who have completed Precalculus. This course offers enhanced material to promote deeper understanding of mathematical concepts including limits, differentiation, integration and logarithmic, exponential and other transcendental functions. The students are required to use a graphing calculator that is equivalent or better than a TI-Nspire. This course will better prepare students for high-level mathematics courses upon entering college or AP Calculus AB/BC.

AP/Calculus AB

Credits: 1

Prerequisite: *Completion of PreCalculus with a grade of B+ or above and Departmental approval*

This course covers the rate of change of a function, differentiation of algebraic and transcendental functions, plane analytical geometry, and integrals. Use of a graphing calculator is integrated throughout the course. This course is equivalent to a first-year college offering in calculus and follows the College Entrance Examination Board's recommended syllabus for the

AB level of the Advanced Placement Calculus Exam. Success on this exam could mean advanced placement for up to two semesters of college calculus.

AP/Calculus BC

Credits: 1

Prerequisite: *AP Calculus AB with a score of 3 or above on the AP Exam or Calculus 1 course taken from a college with a grade of B or above and Departmental approval.*

In addition to the topics of Calculus AB, students in this course will study differential equations, sequences, series, polar coordinates, and parametric equations. Use of a graphing calculator is integrated throughout the course. This course is a sequential course to AP Calculus AB and completes the College Entrance Examination Board's recommended syllabus for the Calculus BC Advanced Placement Exam. Success on this exam could mean advanced placement for up to three semesters of college calculus.

AP Statistics

Credits: 1

Prerequisite: *Algebra 2 with a minimum grade of B+ or PreCalculus with a minimum grade of B and Departmental Approval.*

This course is equivalent to an introductory, non-calculus based college course in statistics. Since statistics is a key element of many courses of study in college, any student interested in psychology, sociology, humanities, business, economics, biology/life sciences, medicine, mathematics/statistics, engineering, etc. would benefit from this course. The purpose of the advanced placement course in statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploratory analysis, planning a study, probability, and statistical inference. Students must have their own graphing calculator (TI-Nspire CX is required), which has a full menu of statistical functions. Science, engineering, business, and mathematics majors usually take an upper division calculus-based course in statistics, for which the AP Statistics course will be an effective preparation. All students who take this course are required to take the AP exam in May. After the AP exam students will complete a major statistical research project of their choice.

This course is equivalent to an introductory, non-calculus based college course in statistics. The purpose of the AP course in statistics is to introduce students to the major concepts and tools for collecting, analyzing and drawing conclusions from data. Students are exposed to four broad conceptual themes:

1. Exploring Data: Describing patterns and departures from patterns
2. Sampling and Experimentation: Planning and conducting a study
3. Anticipating Patterns: Exploring random phenomena using probability and simulation
4. Statistical Inference: Estimating population parameters and testing hypotheses

Students will learn the major concepts of statistics and then apply the concepts to real world activities. Students who successfully complete the course and exam may receive credit,

advanced placement or both for a one-semester introductory college statistics course. This course is offered as a two-part class. The first semester learning about the four conceptual themes and the second semester learning the applications of statistics.

SCIENCE COURSES

Introduction:

The Science Department aims to create a learning community to support student achievement of mastering standards of excellence in science, leading to a scientifically literate population. Students will engage in inquiry-centered curriculum programming which fosters the development and understanding of science content, concepts, skills and attitudes. The program objectives emphasize the development of concepts and skills students need to demonstrate a reasonable command of a science knowledge base and to interpret the world around them using a scientific approach. The science program fosters the development of an understanding of the impact of science on society as a whole.

Integrated Science

Credits: 1

Prerequisite: Completion of 8th grade science

Integrated Science is a semester-long course in which a number of general science topics are discussed and explored in order to help to prepare our younger students for more advanced science courses which they will take at Putnam Science Academy. Topics include the periodic table of elements, chemical reactions, properties of light and the process of photosynthesis, the concept of genetically modified organisms, cell structure and function, electricity and electrical circuit concepts, magnetism, as well as weather and environmental science concepts. Students are also introduced to the scientific research paper and lab report, learning about their structure, bibliographic references and footnoting, and the actual process of writing a lab report or research paper. The course is hands-on and exposes students to the proper use of lab equipment

Environmental Science

Credits: 1

Prerequisite: Integrated Science

Environmental Science examines the mutual relationships between organisms and their environment. In studying the interrelationships among plants, animals, and humans, this course covers the following subjects: photosynthesis, recycling and regeneration, ecosystems, population and growth studies, pollution, and conservation of natural resources.

Biology - College

Credits: 1

Prerequisite: Integrated Science

Biology is designed to provide information regarding the fundamental concepts of life and life processes. Biology also introduces the major topics of modern biology organized in a phylogenetic approach. Topics explored include the process of science, structure and function of the hierarchies of biological organization, unity, and the diversity of organisms. The course content, combined with a double period of laboratory work, reflects recent developments in biological science.

Honors Biology

Credits: 1

Prerequisite: A minimum grade of B+ in a prior science course and Departmental approval.

Honors Biology offers an in-depth survey of college preparatory material for students who have demonstrated ability in science through a high performance level in middle school science classes. The course work assumes that students have excellent reading comprehension, math skills, and show higher order thinking skills. Laboratory investigations and outside readings supplement a comprehensive course of study. Class discussions focus on core foundations and recent developments in biological science. A double period of laboratory experience is also part of the class. The course helps to prepare students for the SAT 2 - Biology Test.

Molecular Genetics

Credits: 1

Prerequisite: Biology with a minimum grade of B or above and Departmental approval.

In Molecular Genetics, students will study plants and their relationships to humans and the biosphere as well as plant structure and function, growth. Additional topics include plant genetics and biotechnology, plant diversity and evolution, as well as the practical and economic uses of plants in our 21st century global society.

Earth Science

Credits: 1

Prerequisite: Departmental approval

Earth Science offers insight into the environment on earth as well as in the stratosphere. While presenting the concepts and principles essential to students' understanding of the dynamics and history of the earth, additional topics to be covered include oceanography, geology, astronomy, meteorology, and geography.

Chemistry - College

Credits: 1

Prerequisite: Departmental approval

Chemistry involves studying the composition, properties, and reactions of substances. This class explores concepts as the behaviors of solids, liquids, and gases, acid/base and

oxidation/reduction reactions, and atomic structure. Chemical formulas and equations and nuclear reactions are also studied.

Honors Chemistry

Credits: 1

***Prerequisite:** Algebra 1 with a grade of B- or above and Departmental approval.*

Honors Chemistry is designed for students who have demonstrated strong academic skills in math and science and are motivated to take a rigorous, fast-paced chemistry course. Chemical principles and quantitative relationships are explored through laboratory work, reading assignments, and class discussion. The course provides a survey of the concepts of inorganic chemistry with emphasis on the molecular nature of matter, the periodicity of matter, and chemical equilibriums. Students are expected to use principles of quantitative reasoning in solving problems. The scope and depth of the course provides students more than adequate preparation for college level chemistry and the SAT II- Chemistry Achievement Test. Students are encouraged to develop higher order thinking and problem solving skills, as well as link chemistry with other science and engineering concepts

AP Chemistry

Credits: 1

***Prerequisite:** Honors Chemistry and Algebra 2 with a minimum grade of B+ and Departmental approval.*

Following the curricula recommended by the College Board, AP Chemistry usually follows high school chemistry and second-year algebra. Topics covered may include atomic theory and structure; chemical bonding; nuclear chemistry; states of matter; and reactions (stoichiometry, equilibrium, kinetics, and thermodynamics). AP Chemistry laboratories are equivalent to those of typical college courses. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

Physics - College

Credits: 1

***Prerequisite:** Algebra 1 with a minimum grade of B and Departmental approval.*

Physics is a laboratory science course that examines the relationship between matter and energy and how they interact. This course will have a strong emphasis in the mathematics of physics. Students explore physics concepts through an inquiry approach. Embedded standards for Inquiry, Technology & Engineering, and Mathematics are taught in conjunction with Mechanics, Thermodynamics, Waves and Sound, Light and Optics, Electricity and Magnetism and Atomic & Nuclear Science.

Honors Physics

Credits: 1

***Prerequisite:** Honors Algebra 2 with a minimum grade of B+ or Departmental approval.*

Honors Physics is an introductory survey course in physics for students who have demonstrated proficiency in algebra and geometry. A rigorous analytical approach is used in the study of the applications of physics to everyday phenomena. Topics include mechanics, waves, light, sound, electricity, and magnetism. Laboratory work and experimental design are an integral part of the curriculum. A double period of laboratory work is included with this class. This course is excellent preparation for the SAT 2 - Physics Achievement Test as well as for AP Physics classes.

AP Physics B

Credits: 1

Prerequisite: *Honors Physics and Honors Algebra 2 with grades of A- and/or Departmental approval.*

This course provides a systematic introduction to the main principles of physics and emphasizes the development of conceptual understanding and problem-solving ability using algebra and some trigonometry. In most colleges, this is a one-year course including a laboratory component and is not the usual preparation for more advanced physics and engineering courses. However, the AP Physics B course provides a foundation in physics for students in the life sciences, pre-medicine, and some applied sciences, as well as other fields not directly related to science. AP Physics B seeks to be representative of topics covered in similar college courses, as determined by periodic surveys. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

AP Physics C

Credits: 1

Prerequisite: *AP Physics B with a score of 3 or above on the AP exam and Calculus AB course taken concurrently and/or Departmental approval.*

This course ordinarily forms the first part of the college sequence that serves as the foundation in physics for students majoring in the physical sciences or engineering. The sequence is parallel to or preceded by mathematics courses that include calculus. Methods of calculus are used wherever appropriate in formulating physical principles and in applying them to physical problems. Strong emphasis is placed on solving a variety of challenging problems, some requiring calculus. The subject matter of AP Physics C is classical mechanics and includes topics in kinematics; Newton's laws of motion, work, energy and power; systems of particles and linear momentum, circular motion and rotation, oscillations, and gravitation. AP Physics C is the first part of a sequence which in college is sometimes a very intensive one-year course but often extends over one and one-half to two years, with a laboratory component. Use of calculus in problem solving and in derivations is expected to increase as the course progresses. Calculus is used freely in formulating principles and in solving problems. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

AP Environmental Science

Credits: 1

Prerequisite: *Honors Biology and Chemistry with a minimum grade of B+ and/or Departmental approval.*

AP Environmental Science is designed by the College Board to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, identify and analyze environmental problems (both natural and human made), evaluate the relative risks associated with the problems, and examine alternative solutions for resolving and/or preventing them. Topics covered include ecological processes and energy conversions, earth as an interconnected system, the impact of humans on natural systems, cultural and societal contexts of environmental problems, and the development of practices that will ensure sustainable systems. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

AP Biology

Credits: 1

Prerequisite: *Honors Biology and Honors Chemistry with a minimum grade of B+ and/or Departmental approval.*

Adhering to the curricula recommended by the College Board, AP Biology covers three general areas: molecules and cells (including biological chemistry and energy transformation), genetics and evolution, and organisms and populations (i.e., taxonomy, plants, animals, and ecology). AP Biology includes college-level laboratory experiments. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

Scientific Research and Design

Credits: 1.0

Prerequisite: *Satisfactory completion of two science courses or Departmental approval.*

Scientific Research is a laboratory science course that enables students to both apply and extend previous science content knowledge toward the endeavor of engaging in open-ended, student-centered investigations. Embedded standards for technology and engineering are taught in the context of the content standards that enable students to practice ethics, think critically, investigate, analyze and evaluate data, and communicate results.

Anatomy & Physiology

Credits: 1

Prerequisite: *Biology with a minimum grade of C+ and/or Departmental approval.*

This course provides a comprehensive study of the anatomy and physiology of the human body. Topics include body organization, homeostasis, cytology, histology, and the integumentary, skeletal, muscular, nervous systems and special senses. Upon completion, students should be able to demonstrate an in-depth understanding of principles of anatomy and physiology and their interrelationships. Laboratory work includes dissection of preserved specimens, microscopic study, physiologic experiments, computer simulations, and multimedia presentations.

Astronomy

Credits: 1

***Prerequisite:** Algebra 1 with a minimum grade of A- and/or Departmental approval.*

This class is an elective, inquiry-based science which will focus on the fundamental study of the universe. It will primarily explore the nature of weather patterns, moon phases, seasons, stars and galaxies. Students will explore these phenomena through a sequence of lab activities where they will make observations, analyze data, do research and problem solve in order to develop an understanding of how these forces of nature affect Earth.

Neuroscience

Credits: 1

***Prerequisite:** Biology recommended and/or Departmental approval.*

Neuroscience is the study of the structure and function of the nervous system. It is a branch of biology that combines physiology, anatomy, developmental biology, and psychology to understand the fundamental properties of the brain, neurons and neural circuits. Students will explore the inner workings of the brain, anatomy, development, working memory, hearing, language, decision making, and stress. There will also be an emphasis on the study of diseases and disorders that affect the brain.

Botany

Credits: 1

***Prerequisite:** Biology recommended and/or Departmental approval.*

Botany is the scientific study of plants and their relationship to the environment. In this course students will study the growth, reproduction, anatomy, taxonomy, and ecology of plants. Students will also touch on the science of outdoor landscape and design that is ecologically friendly to our environment. Both hands-on laboratory and outdoor experiences will accompany classroom activities.

SOCIAL STUDIES COURSES**Introduction:**

The Social Studies Department aims to prepare students for their future roles as global citizens. It is our hope that our students will have a positive influence in world affairs over the decades ahead. Students will be introduced to the historical and cultural influences, which have shaped the United States and nations worldwide. Students will be assisted in developing and applying the intellectual and analytical tools of the social sciences to deepen and broaden their understanding of history as well as current issues that we collectively face. In all courses, the department emphasizes critical thinking skills, especially the comparing and contrasting of differing opinions and perspectives about important social and political questions. Students must complete three years of social studies to meet the graduation requirements of Putnam Science Academy, including one year of United States History. Additionally, students are encouraged to continue their study of social studies beyond the minimum three credit requirements.

College World History Since 1945

Credits: 1

Prerequisite: World History 1 and 2

In this class, students will be asked to evaluate major themes that have shaped world events since the end of World War II. Examples include the components of decision making, the differences between perceptions and reality, the role of culture in domestic and international relations, compatibility of tolerance and ideology, tensions between the rights of individuals and society, as well as the relationship between technology and political policies.

Honors Social Science

Credits: 1

Prerequisite: Teacher/administrative approval

As seniors, many students become more aware of their place in the community as learners, athletes, club members, and citizens. By studying various psychological and sociological theories, they are better able to understand their own experiences and test developmental ideas. Areas of student interest, including topics such as smoking, drugs, cults, alcohol, and AIDS will be explored as a class. Cognitive and decision-making skills are stressed as students become more self-aware. Individual participation is essential to success in the course. Journal writing is a requirement in this course.

Introductory College United States History

Credits: 1

Prerequisite: United States History

This course is a survey of American history from the Native American experience through the Civil War era. Topics include the migrations to the Americas, the colonial and revolutionary periods, the development of the Republic, and the Civil War. Upon completion, students should be able to analyze significant political, socioeconomic, and cultural developments in early American history.

World History 1

Credits: 1

Prerequisite: None

All freshmen are required to take World History I, which is a semester-long survey course designed to give students a broad knowledge and understanding in the study of human societies and the development of world civilizations from the origins of man to the Renaissance and Reformation. While the course is taught chronologically, there is also an on-going examination of historical themes and essential questions necessary for a comprehensive understanding of the impact that past civilizations had on humanity. In addition, students will investigate the impact that religion, geography, art, politics, and economics have had on the cultures of the various civilizations. Students will be challenged to use that knowledge to understand current national and global issues in an historical context.

World History 2**Credits:** 1**Prerequisite:** *A minimum grade of B- in World History 1.*

World History 2 surveys the major historical events from approximately 1600 C.E. to the present day. This course takes a multi-discipline approach to examine the role and impact politics, economics, geography, religion, art, literature, and philosophy had on the development of the modern world. Students will examine topics such as the rise of the “nation state” in Europe, the French Revolution, the origins and consequences of the Industrial Revolution, 19th century political reform in Western Europe, and imperialism in Africa, Asia, and South America. Students will also learn about the causes and consequences of the military and economic events of the past century, including World War I, the Great Depression, World War II, the Cold War, and the Russian and Chinese revolutions. Finally, students will study the rise of nationalism and the continuing persistence of political, ethnic, and religious conflict throughout today’s global society.

European History**Credits:** 1**Prerequisite:** *World History 1 and World History 2*

European History is a semester course that studies European History from 1450 to the present with specific emphasis on the intellectual and cultural, political, social and economic developments that have shaped modern Europe. Students will also examine the development of contemporary institutions, the role of continuity and change in present-day society and politics, and the evolution of current forms of intellectual discourse and artistic expression. By the end of course, students will acquire and use skills indicative of historical scholarship including critical inquiry, analysis, synthesis, and interpretation in both verbal and written mediums.

Ancient Civilizations**Credits:** 1**Prerequisite:** *Departmental approval*

Ancient Civilizations provides a survey of the evolution of society from the ancient Middle East through Greek and Roman civilizations. Typically, students study the rise and fall of civilizations and empires, with an emphasis on the legacies they provide to successive societies. Readings focus on the effects of geography on the growth of civilization, the interaction of cultures, the evolution of social and political institutions, religion and philosophy. Students will read a significant amount of primary sources as well as secondary accounts and interpretations.

World Cultures**Credits:** 1**Prerequisite:** *Departmental approval*

World cultures provide an in-depth look at major cultures using the five geographic themes: location, place, movement, human environment interaction, and region. The study of these

cultures will focus upon historical and present-day culture and geography, family life and structure, social organizations, attitude on education, religious beliefs and institutions, and the intellectual and artistic accomplishments of men and women within the culture. Assessments will focus on the development of reading, writing, critical thinking, technology usage and presentation skills.

Honors World Cultures

Credits: 1

Prerequisite: *A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

Honors World Cultures focuses on several important geographic and cultural areas of today's world. Areas of focus include the Middle East, Africa, the Indian Subcontinent, China, and Japan. For each region, topics that will be examined include geography, history, culture, economy, government, and current issues. The pace, selection of materials, and instructional emphasis are intended to meet the goals outlined for an Honors level of study.

Modern World History

Credits: 1

Prerequisite: *Departmental approval*

Modern World History provides an overview of the history of human society in the past few centuries from the Renaissance period to contemporary society. Students will explore political, economic, social, religious, military, scientific, and cultural developments. Students will have the opportunity to work in a variety of learning situations: individually, in small groups, as well as in classroom discussions.

Modern World History - Honors

Credits: 1

Prerequisite: *A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

Modern World History provides an overview of the history of human society in the past few centuries from the Renaissance period to contemporary society. Students will explore political, economic, social, religious, military, scientific, and cultural developments. Students will have the opportunity to work in a variety of learning situations: individually, in small groups, as well as in classroom discussions. As this class will be taught at an honors level of study, critical thinking skills such as decision making, problem solving, as well as cause and effect will be emphasized.

US History

Credits: 1

Prerequisite: *Departmental approval*

U.S. History provides students with an overview of the history of the United States. This course is a traditional survey course, organized chronologically, that exposes students to a wide-range of

issues, trends, and individuals that have shaped America. This course will cover units of study such as the Colonial Period, the American Revolution, the drafting and implementation of the Constitution, the causes and effects of the Civil War, Reconstruction, the growth of Industrialization, Immigration, the emergence of the United States as a world power, World War I, the Great Depression, World War II, The Civil Rights Movement, and the Vietnam War.

Honors United States History

Credits: 1

Prerequisite: *A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

Honors US History is a traditional survey course, organized chronologically, that exposes students to a wide- range of issues, trends, and individuals. This course will cover units of study such as the Colonial Period, the American Revolution, the drafting and implementation of the Constitution, the causes and effects of the Civil War, Reconstruction, the growth of Industrialization, Immigration, the emergence of the United States as a world power, World War I, the Great Depression, World War II, The Civil Rights Movement, and the Vietnam War. This course is designed for students who have demonstrated excellent proficiency in reading and writing, who can work well with abstract ideas, and who reliably and independently manage a challenging academic workload at the honors level of study.

AP US History

Credits: 1

Prerequisite: *A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

Following the College Board's suggested curriculum, AP U.S. History course provides students with the analytical skills and factual knowledge necessary to address critical problems and materials in U.S. History. Students learn to assess historical materials and to weigh the evidence and interpretations presented in historical scholarship. The course examines the discovery and settlement of the New World through the present day. The principal aim of AP US History is to provide a foundation of study of the impact that the American experience has had on its citizens over time. Engaging a range of approaches, students will consider political, economic, cultural, and social histories while paying particular attention to gender, race, sexuality, class, region, nation, and shifting societal contexts. Students will explore the ways in which we learn and narrate stories of America's past, individually and collectively. This class draws upon a variety of primary texts, including narrative history, journalism, government documents, legal decisions, non-fiction and works of fiction, music, material culture, and documentary and feature film. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

Early College Experience United States History (UConn)

Credits: 1

Prerequisite: *A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

The principal aim of the UCONN ECE US History course is to provide a foundation of study of the impact that the American experience has had on its citizens over time. Engaging a range of approaches, students will consider political, economic, cultural, and social histories while paying particular attention to gender, race, sexuality, class, region, nation, and shifting societal contexts. Students will explore the ways in which we learn and narrate stories of America's past, individually and collectively. This class draws upon a variety of primary texts, including narrative history, journalism, government documents, legal decisions, non-fiction and works of fiction, music, material culture, and documentary and feature film. Students will receive college credits from the University of Connecticut upon successful completion of this course, provided that they earn a grade of "C" or higher.

Government

Credits: 1

Prerequisite: Departmental approval

This course is a study of the origins, development, structure, and functions of government in the United States. Topics include foundations of government, political behaviors, the three branches of government, comparative political and economic systems, as well as participation by citizens in state and local government. The relationship between local, state, and federal governments are also a key point of emphasis in the course.

AP US Government & Politics

Credits: 1

Prerequisite: A minimum grade of B+ in a prior Social Studies course and Departmental approval.

Following the College Board's suggested curriculum, this course provides students with an analytical perspective on government and politics in the United States, involving both the study of general concepts used to interpret U.S. politics and the analysis of specific case studies. This course covers the constitutional underpinnings of the U.S. government, political beliefs and behaviors, political parties and interest groups, the institutions and policy process of the national government, and civil rights and liberties. Additionally, this course offers an analytical perspective on government and politics in the United States. Familiarity with the various institutions, groups, beliefs, and ideas that constitute U.S. government and politics is a requirement to study the specific examples of these general concepts. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

AP World History

Credits: 1

Prerequisite: A minimum grade of B+ in a prior Social Studies course and Departmental approval.

Following the College Board's suggested curriculum, AP World History examines world history from 8000 BCE to the present with the aim of helping students develop a greater understanding

of the evolution of global processes and contracts and how different human societies have interacted. This full-year course explores the expansive history of the human world. Five themes will be used as a frame of reference in the chronological study of our world's history: Interaction between humans and the environment; development and interaction of cultures; state-building, expansion and conflict; creation, expansion, and interaction of economic systems; and development and transformation of social structures. An important skill acquired in the class is the ability to examine change over time. Students will also learn how to compare developments in different regions and in different time periods as well as contextualize important changes and continuities throughout world history. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

AP Human Geography

Credits: 1

Prerequisite: *A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

Following the College Board's suggested curriculum, AP Human Geography introduces students to the systematic study of patterns and processes that have shaped the ways in which humans understand, use, and alter the earth's surface. Students use spatial concepts and landscape analysis to examine human social organization and its environmental consequences and also learn about the methods and tools geographers use in their research and applications. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

AP European History

Credits: 1

Prerequisite: *A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

Following the College Board's suggested curriculum, AP European History course examines European civilization from the High Renaissance period to the present and also exposes students to the factual narrative. In addition, this course helps students develop an understanding of some of the principal themes in Modern European history and the ability to analyze historical evidence and to express that understanding and analysis in writing. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

Psychology

Credits: 1

Prerequisite: *Departmental approval.*

Psychology introduces students to the study of individual human behavior. Course content includes, but is not limited to, an overview of the field of psychology, topics in human growth and development, personality and behavior, and abnormal behavior. Examples of questions to be addressed during the course are as follows: "Where do thoughts and memories come from? What are emotions? Why do we behave the way we do?" Students will begin to understand the human mind by exploring the research and theories of some of the most brilliant psychologists

throughout history. In addition, students will learn behavior modification techniques that they will be able to implement in their own lives in order to reduce levels of stress.

AP Psychology

Credits: 1

***Prerequisite:** A minimum grade of B+ in a prior Social Studies course and Departmental approval.*

Following the College Board's suggested curriculum, AP Psychology 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 facts, principles, and phenomena associated with each of the major subfields within this discipline. Students will also learn about the ethics and methods psychologists use in their science and practice. Students will be immersed in modern psychological techniques investigating the ethics and morality of human and animal research. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

Civil Rights

Credits: 1

***Prerequisite:** Completion of US History and/or Departmental approval.*

Civil Rights examines the general structure and functions of American systems of government, the roles and responsibilities of citizens to participate in the political process, and the relationship of the individual to the law and legal system. This course focuses on the practical understanding of the American law and legal system as it may affect the lives of people on a daily basis. It also addresses the requirements of citizenship as well as the specific functions of local, state, and national governments. Students may enroll in this course for either college or honors credit. Grading of honors students will be at a higher standard than that for college students. The expectations of those enrolled in this course at the honor's level will be greater for those students who are not. These expectations shall include additional reading and writing assignments.

Current Issues

Credits: 1

***Prerequisite:** Departmental approval*

Current Issues studies the political, economic, and social issues facing the United States, with or without an emphasis on state and local issues. This course may focus on current issues or may examine selected issues that span throughout the 20th century to the present. Local and national newspapers and journals will be studied in the class and discussions will be based on reading and writing assignments from those sources.

Economics

Credits: 1

***Prerequisite:** A minimum grade of B- in a prior Social Studies course and Departmental approval.*

Economics provides students with an overview of economics with primary emphasis on the principles of microeconomics and the U.S. economic system. This is a basic course in Economics and it will introduce students to supply and demand, the different forms of business organization, and money and banking. The functioning of our financial institutions will be introduced. Current economic events will be discussed as they apply to the topics being covered. Economic principles may be presented in formal theoretical contexts, applied contexts, or both. This course is recommended to students who want to gain a general understanding of the U.S. economy.

AP Macroeconomics

Credits: 1

***Prerequisite:** Completion of Algebra 2, a minimum grade average of B- in Math and English courses and Departmental approval.*

Following the College Board's suggested curriculum, AP Macroeconomics provides students with a thorough understanding of the principles of economics that apply to an economic system as a whole. The course places particular emphasis on the study of national income and price determination and developing students' familiarity with economic performance measures, economic growth, and international economics. Throughout the course, students will be applying the theory they are learning to current economic conditions. Students will learn how Gross Domestic Product is determined as well as rates of inflation and unemployment. The rate of economic growth in our economy and how The Federal Reserve manages interest rates will also be discussed. This one semester college-level course provides a foundation for a course in AP Microeconomics. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

AP Microeconomics

Credits: 1.0

***Prerequisite:** Successful completion of AP Macroeconomics and Departmental approval.*

Following the College Board's suggested curriculum, AP Microeconomics provides students with a thorough understanding of the principles of economics that apply to the functions of individual decision makers (both consumers and producers). The course will cover theories of consumer and business behavior. Students will analyze the different costs, price, and output decisions faced by firms. Four different market models will be studied: pure competition, monopolistic competition, oligopoly, and pure monopoly. This course places primary emphasis on the nature and functions of product markets, while also including a study of factor markets and the role of government in the economy. This one semester course should be taken after AP Macroeconomics. Students will be expected to prepare for and take the AP Exam in May at the conclusion of this course.

Introduction to Business

Credits: 1

***Prerequisite:** Departmental approval*

This course introduces the various fields of business study. Topics include economic systems, small business development, forms of American businesses, management, marketing, accounting, finance, banking, and ethics. It prepares for higher-level business studies and is excellent for students who wish to gain an introduction to financial and economic survival leading to successful financial planning.

Marketing

Credits: 1

Prerequisite: Departmental approval

This course introduces the various fields of business study and is taught by a college professor or taught at a college. Students must pass the placement test of the college or show proficiency on national aptitude tests (SAT/ACT/TOEFL/IELTS) to be able to take this course. Topics include economic systems, small business development, forms of American businesses, management, marketing, accounting, finance, banking, and ethics. It prepares for higher-level business studies and is excellent for non-business majors who wish to gain an introduction to financial and economic management leading to successful financial planning.

International Business

Credits: 1

Prerequisite: Introduction to Business with a minimum grade of C.

This course provides an understanding of the cultural, political, and economic environments of international business. The role and responsibilities of international organizations are reviewed and discussed. A particular emphasis will be placed on the structure of international business and business operations.

Spanish Culture

Credits: 1

Prerequisite: Departmental approval

This course serves as a history course covering the Moorish occupation of Al-Andalus, to the Golden Age of Spain in the 16th century, and finally the wave of Independence movements throughout the Territories once occupied by the Spanish Crown. Discussing the Spanish Empire's rise and Fall in the western world, students will be able to understand why Spanish culture is so influential and Important in modern day North and South America. Additionally, cultures and foods throughout modern Latin America and Spain will be supplemented according to the section of history being discussed.

Human Development

Credits: 1

Prerequisite: Departmental approval

This course explores the different stages of human life - Prenatal, Infancy, Childhood,

Adolescence, Adulthood - and the biological, psychological and social changes occurring in individuals during them. Topics include the theories of development, genetics, birth and the neonate, cognitive and brain development, early experience, attachment, motor and language development, social and moral development, aging, and death.

Sports Management

Credits: 1

Prerequisite: None

This class studies the basic management skills in sports related enterprises. A variety of marketing techniques and approaches are analyzed to broaden students' background in this area and to better allow them to develop effective and comprehensive sports marketing plans.

WORLD LANGUAGE COURSES

Introduction:

As there has been a greater emphasis on issues pertaining to international relations and diplomacy, the study of foreign languages has become more vital for student usage in the twenty-first century. Effectiveness of improved communication among peoples of the world depends on the ability to understand each other's language and culture. The study of languages, cultures and literature gives us a better understanding of our modern, complex and multicultural world, therefore, those who have studied a world language will most probably be better prepared to help institute peaceful international relationships of the future.

Spanish 1

Credits: 1

Prerequisite: Departmental approval

This introductory course is designed for students who have no prior knowledge of and/or who have had less than a full school year of previous formal exposure to Spanish. Instructional emphasis is placed on developing proficiency in the areas of listening, speaking, reading and writing skills. Students will also learn fundamental grammar and useful idiomatic expressions through use of the language in practical situations. Students will write short paragraphs and engage in conversation on a regular basis. An appreciation of native Spanish-speaking cultures including the people, holidays, and customs will be incorporated into the class.

Spanish 2

Credits: 1

Prerequisite: Spanish 1

In this course, students add to their foundation in practical communicative skills, using the target language to gain information, to discuss topics of interest, and to describe events of the present, past, and future. Pronunciation, vocabulary, idiom and grammar are expanded to support oral and written communication skills as well as reading comprehension. Students will begin to compose

short compositions, and engage in more frequent conversation in Spanish. An appreciation of native Spanish-speaking cultures including the people, holidays, and customs will be incorporated into the class.

Spanish 3

Credits: 1

Prerequisite: Spanish 2

The goal of this course is to provide a firm basis in all the skills that the student has been acquiring for mastery in oral and written communication in Spanish. Students will significantly increase their knowledge of vocabulary, their overall understanding of the language, as well as to their writing skills by reading more comprehensive works. Speaking assessments give the students the opportunity to develop their oral proficiency. An appreciation of native Spanish-speaking cultures including the people, holidays, and customs will be incorporated into the class.

Spanish 4

Credits: 1

Prerequisite: Spanish 3

In Spanish 4, vocabulary, use of idioms, and grammatical constructions are expanded and reinforced aiming to advance students' skills and abilities to read, write, speak, and understand the Spanish language for use on a daily basis. By Spanish 4, students should be able to maintain simple conversations with sufficient vocabulary and an acceptable accent, easily understand the spoken word at a normal pace, read authentic prose, and write narratives that indicate a good understanding of Spanish grammar and vocabulary. An appreciation of native Spanish-speaking cultures including the people, holidays, and customs will be incorporated into the class.

French 1

Credits: 1

Prerequisite: Departmental approval

French 1 is designed for students who have no prior knowledge of and/or who have had less than a full school year of previous formal exposure to French. It introduces students to French language and culture with an emphasis on basic grammar and syntax, simple vocabulary, and the spoken accent so that students can read, write, speak, and understand the language at a basic level within predictable areas of need, using customary courtesies and conventions. An appreciation of native French-speaking cultures including the people, holidays, and customs will be incorporated into the class.

French 2

Credits: 1

Prerequisite: French 1

French 2 builds upon skills developed in French 1, extending students' ability to understand and express themselves in French and increasing their vocabulary. Typically, students learn how to engage in discourse for informative or social purposes, write expressions or passages that show understanding of sentence construction and the rules of grammar, as well as comprehend the language when spoken slowly. An appreciation of native French-speaking cultures including the people, holidays, and customs will be incorporated into the class.

French 3

Credits: 1

Prerequisite: French 2

French 3 focuses on having students express increasingly complex concepts both verbally and in writing. Comprehension goals for students may include attaining more facility and faster understanding when listening to the language spoken at normal rates, being able to paraphrase or summarize written passages, and conversing easily within limited situations. An appreciation of native French-speaking cultures including the people, holidays, and customs will be incorporated into the class.

French 4

Credits: 1

Prerequisite: French 3

French 4 focuses on advancing students' skills and abilities to read, write, speak, and understand the French language so that they can maintain simple conversations with sufficient vocabulary and an acceptable accent, have sufficient comprehension to understand speech spoken at a normal pace, read uncomplicated but authentic prose, and write narratives that indicate a good understanding of grammar and a strong vocabulary. An appreciation of native French-speaking cultures including the people, holidays, and customs will be incorporated into the class.

Mandarin 1

Credits: 1

Prerequisite: Departmental approval

This introductory course is designed for students who have no prior knowledge of and/or have had less than a full school year of previous formal exposure to Mandarin. The focus of this course is to develop students' language proficiency in listening, speaking, and reading, while the Hanyu Pinyin (Chinese pronunciation system) will be taught. Students will be able to read short paragraphs with Pinyin and engage in simple conversations. An appreciation of native

Mandarin-speaking cultures including the people, holidays, and customs will be incorporated into the class.

Mandarin 2

Credits: 1

Prerequisite: Mandarin 1

This course aims to help students to achieve the 5 goals (Communication, Cultures, Connections, Comparisons and Communities) with a special emphasis on communicative competence and accuracy. Classroom instruction is predominantly delivered in Chinese. English subtitles will be provided to ensure comprehensive input when needed. Pronunciation, vocabulary, and grammar are expanded to support oral and reading comprehension. Students will be able to give short presentations on some topics, communicate effectively with native Mandarin Chinese speakers in daily conversations, and understand Chinese poems or songs. An appreciation of native Mandarin-speaking cultures including the people, holidays, and customs will be incorporated into the class.

Greek 1

Credits: 1

Prerequisite: Departmental approval

This is an introduction to the Modern Greek language that provides students with a solid foundation in the four skills of listening, speaking, reading and writing in Greek, both through a sound understanding of the basic structures of the Greek language, as well as through the cultural context within which Greek is used. In class, emphasis is on oral communication and the acquisition of fluency in speaking.

COMPUTER SCIENCE AND TECHNOLOGY COURSES

Introduction:

Access to and appropriate use of information and channels of communication are vital aspects of life in our global society. The power of computers as a medium for providing and communicating information has made the ability to use information technology as an essential skill. Our school offers an array of computer skills, graphics editing, web design, database programming and visual programming courses according to their ability and grade level.

Digital Media

Credits: 1

Prerequisite: None

Digital Media will be a student driven course in which all skill levels are welcome. Whether or not a student has ever done any type of digital design or photo/video editing, there is a spot for them in this course. Students will be introduced to various software from the Adobe Suite, such

as Photoshop (photo editing) and Premiere (video editing). This will be a hands on course from the very first day. If a student can think it - they can create it!

Media 1: Introduction to Media Literacy

Credits: 1

Prerequisite: None

This course is designed to help students develop an informed, critical, and practical understanding of new communication media including analysis of digital and social media. The course explores the goals and methods of various media industries, identifies the effects media has on people, analyzes the benefits and potential negative effects of media content, and identifies techniques students can use to become more media literate as individuals. Topics of study include social media do's and don'ts, using social media the right way, checking source credibility, preparing for job interviews using social media, engaging with an audience and brand building, public speaking presentations, blogging, and surveying individuals and groups.

Media 2: Advanced Media, TV, & Radio

Credits: 1

Prerequisite: Media 1: Introduction to Media Literacy

In this course, students will learn the fundamental skills necessary for digital radio, audio, and television production. Students will gain experience reading and writing radio copies, learn how to present professionally, hone their interview skills, and express their creativity through brainstorming and developing story ideas. Students will take part in making radio commercials as well as recording and producing interviews. Students will provide sports and school reporting through audio, video, and editorial/column writing.

Computer / Office Applications

Credits: 1

Prerequisite: None

In Computer Applications course, students acquire knowledge of and experience in the proper and efficient use of previously written software packages. This course explores a wide range of applications, including (but not limited to) word-processing, spreadsheet, graphics, and database programs, and they may also cover the use of electronic mail and desktop publishing. It will also explore topics in the development of computers, hardware, software, and computer terminology. The software currently being explored includes Microsoft Office (Word, Excel, and PowerPoint), Outlook Express, Google Drive, Online storage and sharing tools and Internet Explorer.

Web Page Design

Credits: 1

Prerequisite: None

Web Page Design course teaches students how to design web sites by introducing them to and refining their knowledge of site planning, page layout, graphic design, and the use of markup languages—such as Extensible Hypertext Markup, JavaScript, Dynamic HTML, and Document Object Model—to develop and maintain a web page. In addition, Using professional editing and design software programs: *Dreamweaver*, *Photoshop*, *Final Cut Express*, or *Final Cut Pro*, students may complete projects from a simple multi-page website to a complex multimedia micro site. This course also covers security and privacy issues, copyright infringement, trademarks, and other legal issues relating to the use of the Internet.

Graphic Design

Credits: 1

Prerequisite: None

Graphic Design course emphasizes design elements and principles in the purposeful arrangement of images and text to communicate a message. They focus on creating art products such as advertisements, product designs, and identity symbols. Graphic Design course investigates the computer's influence on and role in creating contemporary designs and provide a cultural and historical study of master design works of different periods and styles.

This course also provides students with the opportunity to explore the capability of the computer to produce visual imagery and to apply graphic techniques to various fields, such as advertising, TV/video, and architecture. Course topics include modeling, simulation, animation, and image retouching. using two professional design and editing software programs from Adobe: *Photoshop* and *Illustrator*. This course places an emphasis on the print medium for delivery of designs, while stressing software mechanics and creative design techniques.

AP Computer Science A

Credits: 1

Prerequisite: A or above in Algebra 1 and ability to program at least one language.

AP Computer Science A course provides students with the logical, mathematical, and problem-solving skills needed to design structured, well-documented computer programs that provide solutions to real-world problems. This course covers such topics as programming methodology, features, and procedures; algorithms; data structures; computer systems; and programmer responsibilities.

AP Computer Science AB

Credits: 1

Prerequisite: A or above in Algebra 1 - 2 and AP Computer Science A

AP Computer Science AB courses (in addition to covering topics included in AP Computer Science A) provide a more formal and extensive study of program design, algorithms, data structures, and execution costs.

C++ Programming

Credits: 1

Prerequisite: A or above in Algebra 1 - 2

C++ Programming course provides an opportunity for students to gain expertise in computer programs using the C++ language. As with more general computer programming courses, the emphasis is on how to write logically structured programs, include appropriate documentation, and use problem solving techniques. More advanced topics may include multi-dimensional arrays, functions, and records.

Java Programming

Credits: 1

Prerequisite: A or above in Algebra 1 - 2

The Java Programming course provides students with the opportunity to gain expertise in computer programs using the Java language. As with more general computer programming courses, the emphasis is on how to structure and document computer programs, using problem-solving techniques. Topics covered in the course include syntax, I/O classes, string manipulation, and recursion.

Robotics

Credits: 1

Prerequisite: Departmental approval

The world will soon be run by robots! Someone needs to build them and someone needs to tell them what to do. Are you up for the challenge? In this course we will build state of the art robots with sensors that can detect and pick up objects, follow lines and more. We will learn to program the robots to follow our instructions and carry out the tasks we want them to accomplish. If you're the kind of person who likes to build, solve problems, and work in a team, check this course out. No prior knowledge of robotics or programming is required; hey, even the professionals had to start somewhere.

Coding/Programming

Credits: 1

Prerequisite: Departmental approval

Control your world! Learn to program and tell the *machines* what to do! This is an introductory course in Object Oriented Programming using Visual Studio VB.Net. We will start by learning the fundamentals of computers and then we'll use VB.Net to create objects like forms, buttons, text boxes, lists, etc. and learn to write the code that makes those objects work. The course will also explore languages like Java, Visual C and discuss gaming theory. For anyone who has ever wondered how someone created all the great apps and programs you use, this course is for you.

VISUAL ARTS COURSE OFFERINGS

The goal of the Visual Arts Program at Putnam Science Academy is to challenge students to not only embrace the beauty of the arts in all of its forms (drawing, painting, ceramics, graphic design, and photography), but to learn more about how to best nurture their creative thinking skills through art, which, in turn will lead to all types of opportunities in career fields of one's choosing.

Beginning with the Class of 2025, all PSA students must successfully earn two credits in the Visual Arts in order to fulfill graduation requirements.

Art History I (Fall Semester)

Credits: 1

Prerequisite: None

In Art History I, students will examine contributions made in art from the Prehistoric time period through the Middle Ages. Points of study include the making of ceramics from ancient civilizations of Yangshao China all the way to the construction of Medieval cathedrals during the Gothic period. Students will be assessed through a variety of mediums and will also write a summative research paper that will assess the depth of their knowledge and understanding of an Art History topic of choice.

Art History II (Spring Semester)

Credits: 1

Prerequisite: None

In Art History II, students will examine contributions made in art from the Renaissance time period through the end of the 20th Century. Points of study include the master works of Renaissance artists such as Leonardo da Vinci and Michelangelo all the way through the works of 20th century Modern Masters such as Frida Kahlo, Henri Matisse, and Andy Warhol. Students will be assessed through a variety of mediums and will also write a summative research paper that will assess the depth of their knowledge and understanding of an Art History topic of choice.

Introduction to Painting/Drawing (Fall Semester)

Credits: 1

Prerequisite: None

This course provides the foundation of painting and drawing, its application, and materials. It focuses on the color theory and the processes of wet-into-wet, dry-brush paint and drawing applications. This course will expose students to the basics of painting and drawing including materials, techniques, craft, and mediums. The subject matter will include still life, landscape, and exploration of individual creative expression. By the end of the class, students will have created a portfolio of their work for future endeavors.

Painting/Drawing II (Spring Semester)

Credits: 1

Prerequisite: Introduction to Painting/Drawing or Department Approval

This course expands upon foundational art skills learned in the Introduction to Painting/Drawing course. Prior to enrolling in this class, students are expected to have a baseline knowledge in the use of color, portrait and the human figure, landscape designs, and additional mediums. As with the Introductory class, students will create a portfolio of their work by the end of this course.

Introduction to Photography (Fall Semester)

Credits: 1

Prerequisite: None

Students enrolled in this class will not only learn how to utilize proper techniques when taking photos, such as lighting exposure and depth of field, but will also engage in digital post processing techniques via tools such as Adobe Lightroom and Photoshop. By the end of the class, students will have created a portfolio of their work for future endeavors.

Photography II (Spring Semester)

Credits: 1

Prerequisite: Introduction to Photography or Department Approval

In Photography II, students will learn advanced camera settings in order to create more complex works. Extensive collaboration and peer editing are also hallmarks of this class. Students will need to enter this class with a proficiency in the utilization of Adobe Lightroom and Photoshop. As with the Introductory class, students will create a photography portfolio of their work by the end of this course.

Introduction to Ceramics (Fall Semester)

Credits: 1

Prerequisite: None

At the beginning level of study, students will be introduced to the techniques of clay form and will be able to test their learning through a variety of hands-on projects throughout the semester. Students will also study the history of pottery and its similarities and differences among civilizations dating back to the 7th millennium BCE. By the end of the class, students will have completed a minimum number of projects as determined by the instructor.

Ceramics II (Spring Semester)

Credits: 1

Prerequisite: Introduction to Ceramics or Department Approval

For those that have taken the Introduction course, Ceramics II will provide students the opportunity to design and create more complex ceramic pieces through the use of wheel and hand building techniques. By the end of the course, students will have completed multiple projects for a portfolio of work that students can build and expand upon in their future studies.

Visual Expressions I (Spring Semester)

Credits: 1

Prerequisite: Introduction to Painting/Drawing or Department Approval

This course is an extension of the Introduction to Painting/Drawing course. In this class students will be asked to use what they have already learned about the foundations of art in order to better create and interpret art in the contemporary world. This course will expose students to the basics of various mediums, along with conceptual ideas of how an artist creates a painting. The subject matter will include still life, landscape, and exploration of individual creative expression.

Visual Expressions II (Fall Semester)

Credits: 1

Prerequisite: Visual Expressions I or Department Approval

This class gives students the opportunity to investigate the rudiments of art on an accomplished level of creating and interpreting art in the world around them. Students will explore materials, techniques, concepts, and processes essential to understanding other art processes such as drawing, painting, the elements and principles of design, color theory, the critique process, and keeping a sketchbook. The subject matter will include still life, landscape, and exploration of individual creative expression.

Introduction to Game Design (Fall Semester)

Credits: 1

Prerequisite: None

In this course, students will learn various elements of how video games are created and the productivity side of what makes a “good game.” We will explore aspects of these criteria such as genres, mechanics, dynamics, and visuals of games, to develop a clear understanding of the processes of game design. Students will learn the early fundamentals of the production of video

games by producing design documents that will guide them in producing prototype games in the game engine, Unity3D.

Introduction to 3D Modeling (Spring Semester)

Credits: 1

Prerequisite: None

In this course, students will learn the skills and tools needed to create 3-dimensional models to be used in media. Students will use software such as Autodesk Maya to develop a portfolio of 3-D assets that will demonstrate the various tools and techniques used by professionals that create stunning visuals for video games, movies, and other forms of media.

Computer Animation (Spring Semester)

Credits: 1

Prerequisite: Introduction to 3D Modeling or Department Approval

In this course, students will learn the skills to produce motion graphics used in common day films and video games. We will focus on both 2D and 3D animation, dissecting and analyzing various real-life actions and how to translate those digitally through the use of key frames on various objects. This course dives into advanced topics of computer graphics, using professional software such as Autodesk Maya and Photoshop.

Introduction to Film: (Fall Semester)

Credits: 1

Prerequisite: None

In this course, students will begin by learning the history of film production, and acquaint themselves with the terminology used in a professional setting. We will then dive into developing aspects of Film such as film editing, film effects, audio capturing/editing, and much more. We will be using professional software such as Adobe Premiere and After Effects to produce high quality projects. By the end of this course, students will have the skills and knowledge to produce a short film within the class.

Digital Media (Fall and Spring Semester)

Credits: 1

Prerequisite: None

In this course, students will learn a variety of skills regarding digital graphics. Students will begin by learning image manipulation, graphic design, and digital art techniques in Adobe Photoshop. We will focus primarily on realism and lighting aspects of digital art, before proceeding into visual effects and rendering. The second half of the course will consist of learning about video editing, as well as post-processing in programs such as Adobe Premier.

PHYSICAL EDUCATION AND HEALTH COURSES

By taking courses in physical education and health, it is our expectation that PSA students will garner the knowledge and skills to participate in a variety of healthy activities and appreciate the benefits of maintaining a healthful lifestyle long after graduation. Additional goals for students will be to understand how to evaluate and access resources in their community in pursuing a healthy and active life as well as be aware of future career opportunities available in this field.

Science of Nutrition

Credits: 1

Prerequisite: None

This course is designed to provide a broad understanding of the basic principles of nutrition and some of the issues and controversies surrounding this body of knowledge. It will identify the essential nutrients and their functions, as well as describe nutritional behaviors that promote optimal nutrition and disease prevention throughout the life cycle. Energy balance, nutrition for fitness, and food safety will all be included. At the end of the course, students will assess and evaluate their own diet analysis based on a 5-day food recall and then develop a plan for improvement.

Science of Fitness

Credits: 1

Prerequisite: None

Science of Fitness is an introductory course designed to help each student to improve muscular strength, gain knowledge and understanding of weight training theory and practice, and develop a personalized weight training program.

Science of Health

Credits: 1

Prerequisite: None

This course focuses on gaining current knowledge about selected health topics that impact the individual and the community. This course will touch on a variety of topics including: Drugs: drug information, drug use/abuse, impacts of drugs, addiction, social factors, societal issues relating to drug use Mental Health: self-esteem, understanding emotions, anger management, stress management, depression, suicide and grief and loss. • Consumerism: Nutrition concepts, in-depth analysis of consumer products and origins, health risks associated with consumerism and environmental hazards, and a focus on skills to empower students to make thoughtful behavioral choices for personal and occupational health. By the conclusion of the course, students will have the opportunity to demonstrate the following skills: goal setting, coping with stress, communicating, and decision-making. Disease prevention, media awareness, and accessing community resources will be integrated throughout the course.

Physical Education

Credits: 1

Prerequisite: None

Physical Education courses provide students with knowledge, experience, and an opportunity to develop skills in more than one of the following sports or activities: team sports, individual/dual sports, recreational sports, and fitness/conditioning activities.

Team Sports

Credits: 1

Prerequisite: *None*

Team Sports courses provide students with knowledge, experience, and an opportunity to develop skills in more than one team sport (such as volleyball, basketball, soccer, and so on).

Individual/Dual Sports

Credits: 1

Prerequisite: *None*

Individual/Dual Sports courses provide students with knowledge, experience, and an opportunity to develop skills in more than one individual or dual sport (such as tennis, golf, badminton, jogging/running, racquetball, and so on).

NON-TRADITIONAL ACADEMIC PROGRAMS/LEARNING OPPORTUNITIES**Introduction:**

The following courses are designed to inspire students to begin thinking about life after they complete their high school program. Through these classes, students will learn the importance of standardized tests, how to prepare for them, and what strategies to employ on test day. Students will also learn to communicate more effectively and recognize their areas of strength and areas that they can improve.

SAT Preparation

Credits: 1

Prerequisite: *None*

Description: The SAT Prep course is designed to help students learn strategies for improving their SAT scores. The course concentrates on SAT reading, vocabulary, and writing skills along with math practice. The course includes practice in taking the SAT test, as well as strategies for the question types such as sentence completion, vocabulary, critical reading, writing, finding errors, and revision. The course is tailored to the new SAT through the use of Khan Academy online, classroom lessons, and official College Board SAT practice tests.

Postgraduate Seminar

Credits: 1

Prerequisite: *None*

Description: Postgraduate Seminar will focus on postsecondary education and students will explore, plan and prepare for life during and after college. A main goal of this course will be to prepare students for upcoming SAT and ACT exams. Students in this course will explore careers, research colleges, write resumes and application essays, submit college applications and financial aid forms, and apply for additional scholarships. The students will strengthen and develop skills needed for post secondary plans including activities in team building, handling stress, building communication skills, and learning about personal finance.

Introduction to Communication:

Credits: 1

Description: This course provides exposure to effective communication in one-to-one, small group, and large group settings. Students analyze their communication abilities and practice techniques to become more comfortable with their communication skills.

Elective Logic

Credit 1

Prerequisite: Algebra 1

Description: Familiarize students with the rules of inference, teach students how to prove a conclusion of a valid argument and disprove the conclusion of an invalid argument. Provide the students with basic knowledge of mathematical logic to prepare them for more advanced content.

Independent Study

Credits: 1

Prerequisite: *Teacher and administrative approval*

Description: The independent study course allows the student to explore a topic of interest that is not offered as a traditional course under the close supervision of a faculty member. The course may include directed readings, applied work, assisting a faculty member with a research project, carrying out an independent research project, or other activities deemed appropriate.

Additional Offerings:

In addition to the courses above, Putnam Science Academy has partnered with Quinebaug Valley Community College for our students to take college level courses. Quinebaug Valley Community College offers students the opportunity to take classes at a college campus setting and/or an online course. These courses are available for eligible Juniors, Seniors, and Postgraduate students. Eligibility depends on a variety of factors including, but not limited to, SAT scores and a Basic Skills Assessment through the participating colleges.

Putnam Science Academy presents Virtual High School as another opportunity for our students to take Advanced Placement Courses. A course taken through Virtual High School is NCAA

approved and will be recognized as an additional course and credit(s) for our students in addition to the four courses a student takes throughout their day.