

PUTNAM SCIENCE ACADEMY

Creating and Achieving Excellence



Program of Studies

2020-2021

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Note:

Traditionally, 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 catalog is a reference manual for students, parents, and faculty at Putnam Science Academy. It is a complete guide to the possible course offerings at Putnam Science Academy. Each department has described its specific course offerings, highlighting the main components of each course as well as the prerequisites, which must be met for the course enrollment.

Planning an individual student's high school program of studies requires a good communication between the students, parents, and school. The courses at Putnam Science Academy provide students with many opportunities to meet their educational needs. Beyond state, district, college and career requirements, the students are encouraged to select courses that will be academically stimulating and personally enriching. The aspirations, achievements, and abilities of the student should determine the program of studies that he or she pursues in high school.

College Bound Athletes:

Special attention is put on college bound athletes before they even step foot in Putnam Science Academy doors. As College Counselors, we cross reference all incoming transcripts with the NCAA list of approved courses. The following are Putnam Science Academy NCAA approved courses:

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

H/CALCULUS
PRECALCULUS
STATISTICS
STATISTICS & DISCRETE MATH
TRIGONOMETRY & FUNCTIONS
ANATOMY & PHYSIOLOGY
AP BIOLOGY 2
AP PHYSICS 1
AP/CHEMISTRY 2
AP/PHYSICS 2
BIOLOGY
CHEMISTRY
ENVIRONMENTAL SCIENCE
INTEGRATED SCIENCE
PHYSICAL SCIENCE
PHYSICS
AP/FRENCH 5 LANG & CULT
AP/MANDARIN 5 LANG & CULT
AP/SPANISH 5 LANG & CULT

FRENCH I
FRENCH II
FRENCH III
H/FRENCH 4
H/MANDARIN 4
H/RUSSIAN 4
H/SPANISH 4
MANDARIN 1
MANDARIN 2
MANDARIN 3
RUSSIAN 1
RUSSIAN 2
RUSSIAN 3
SPANISH I
SPANISH II
SPANISH III

GRADUATION AND GRADING POLICY

Graduation Requirements:

Putnam Science Academy offers a College Prep School to students who satisfactorily meet graduation requirements. Post graduate students who complete program requirements are issued a completion certificate.

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

College Entrance Requirements:

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:

1. Changing courses after the academic year has started can often be very disruptive to a student's schedule. Thus, elective course changes will not be permitted if they interfere with academic courses already scheduled.

2. Adding classes/Dropping classes: Remember, all students must maintain a minimum course load of 7 credits per year.

- Last day to add/drop a first semester class or a year long course: By the third Friday of the first quarter.
- Last day to add/drop a second semester class: 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.

3. 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.

4. 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 at Putnam Science's transcript.

Instructional Levels:

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

College Prep

Curricula designed to intellectually challenge and continue the academic development of the majority of students who have made satisfactory progress to date, through our college preparatory curriculum.

Honors

Rigorous honors curricula that move at an accelerated pace through the course material and include especially challenging reading and writing assignments. These courses are 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.

Advanced Placement

Advanced Placement (AP) courses are an opportunity for students to take college level classes while completing their high school career. AP classes are extremely demanding. Students should only take these classes if they demonstrate college level skills in reading and writing, as well as have a commitment to do hard work with a desire to understand and discuss difficult concepts. Students who take the course must also take and pass an exam. Upon earning a passing exam grade, the course may be considered for college credit.

ENGLISH/LANGUAGE ARTS COURSES

Introduction:

The English Program has a strong focus on composition and literature while instilling intelligent habits of speaking and listening. Our first concern in composition is to assist students in writing honestly and developing styles with authentic voice. Emphasis is placed on personal, technical, and analytical forms of writing as well as those skills necessary to enhance our scientific curricula.

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 some of the major cultural and aesthetic movements of American Literature and British Literature, giving attention to the voices of women, minorities, and non-western writers. See the following chart for the typical sequence of courses.

Introduction to Literature - College

Credits: 1

***Prerequisite:** Completion of eighth grade English and reading at, or above grade level.*

Description: This course builds upon students' prior knowledge of grammar, vocabulary, word usage, and the mechanics of writing and usually include 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:** At least a grade of B+ in eighth grade English and reading above grade level*

Description: This course builds upon students' prior knowledge of grammar, vocabulary, word usage, and the mechanics of writing and usually include 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. Before entering this course, parents and students should carefully consider the recommendation of the teacher and the department head.

World Literature - College

Credits: 1

Prerequisite: *Successful completion of Introduction to Literature or administrative/teacher approval*

Description: 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: *At least B- in Honors Introduction to Literature or at least A- in Introduction to Literature course and administrative/teacher approval.*

Description: World Literature course 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. Since Honors World Lit. 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 high school English. 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 a heavy emphasis on writing, therefore students should enter this course with strong writing skills intact. Written research projects, essays, and oral presentations are requirements.

American Literature - College

Credits: 1

Prerequisite: Successful completion of World Literature or administrative/teacher approval

Description: This course continues to develop students' writing skills, emphasizing clear, logical writing patterns, word choice, and usage, as students write essays and begin to learn the techniques of writing research papers. Students continue to read works of literature, which often form the backbone of the writing assignments. Literary conventions and stylistic devices may receive greater emphasis than in previous courses. American Literature course focuses upon commonly known American authors and their work. These may include Hemingway, Miller, Poe, and O'Neill. There will be continuous emphasis on vocabulary building as a corollary to the reading. Writing projects will be designed to strengthen students' communication skills. The student selecting this course will have a very good background in American Literature and in the mechanics of grammar and writing. Students improve their critical-thinking skills as they determine the underlying assumptions and values within the selected works and as they understand how the literature reflects the society of the time. Oral discussion is an integral part of literature courses, and written compositions are often required.

American Literature - Honors

Credits: 1

Prerequisite: At least B- in Honors World Literature or at least A- in World Literature course and administrative/teacher approval.

Description: Honors American Literature opens through the familiarization with the main literary genres and progresses through the study of significant works of American Literary Art. A study of American Literature parallels and enhances the study of U.S. History. Literary works studied are also viewed imaginatively and related to immediate experience. In essence, 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. The class also focuses on expression and the creative process, understanding how to turn your thoughts into words on a page. A variety of mediums are addressed including, short story, play 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, Scarlet Letter and others as well as a vast assortment of classic American short stories and poetry. Students improve their critical-thinking skills as they determine the underlying assumptions and values within the selected works and as they understand how the literature reflects the society of the time. Oral discussion is an integral part of literature courses, and written compositions are often required.

British Literature - College

Credits: 1

***Prerequisite:** Successful completion of American Literature or administrative/teacher approval*

Description: 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:** At least B- in Honors American Literature or at least A- in American Literature course and administrative/teacher approval.*

Description: 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 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. 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 3 Language & Composition

Credits: 1

Prerequisite: *Successful completion of Honors World Literature, with at least a grade of a B and teacher/administrative approval.*

Description: Following the College Board's suggested curriculum designed to parallel college-level English courses, AP English Language and Composition course 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 4 Literature & Composition

Credits: 1

Prerequisite: *Successful completion of Honors American Literature, with at least a grade of a B and teacher/administrative approval.*

Description: Following the College Board's suggested curriculum designed to parallel college-level English courses, AP English Literature and Composition courses 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: B- or higher in a prior English Literature course

Description: 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: B- or higher in a prior English Literature course and teacher recommendation

Description: This course focuses on students' writing skills and develop 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: B- or higher in a prior English Literature course

Description: Public Speaking course enables 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 a public.

Creative Writing and Composition - College

Credits: 1

Prerequisite: B- or higher in a prior English Literature course and teacher/admin approval

Description: 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 form such as poetry or playwriting.

Journalism

Credits: 1

Prerequisite: B- or higher in a prior English Literature course and teacher/admin approval

Description: Journalism course is 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 course introduces 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 his potential as a critical and logical thinker. The department strives to provide experiences that stress the concepts and skills necessary for success in today's society as a citizen, student, worker, consumer, and provider.

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, and to approach mathematics with confidence. While we want students to feel challenged, 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.

Analysis

Credits: 1

Prerequisite: *Algebra 1, Geometry, Algebra 2 (Grade of B+ or higher)*

Description: 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 a 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. A grade of B or higher in Analysis will prepare a student for AP Calculus.

Algebra 1

Credits: 1

Prerequisite: *Pre-Algebra or equivalent.*

Description: Algebra 1 courses include 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: *Pre-Algebra or equivalent with a grade of A- or above*

Description: 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 of the following: the range of topics is greater and in more depth than a non-accelerated course, and the pace is faster.

Geometry

Credits: 1

Prerequisite: *Algebra I*

Description: Geometry courses, emphasizing an abstract, formal approach to the study of geometry, typically include 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: *Algebra I with a grade of A- or above*

Description: 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 of the following: the range of topics is greater and in more depth than a non-accelerated course, and the pace is faster.

Algebra 2

Credits: 1

Prerequisite: *Algebra 1 and Geometry*

Description: 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: *Algebra 1 and Geometry with a grade of B+ or above*

Description: 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 of the following: the range of topics is greater and in more depth than a non-accelerated course, and the pace is faster.

Statistics OR Statistics & Discrete Math

Credits: 1

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

Description: 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.

Trigonometry & Functions

Credits: 1

Prerequisite: *Geometry and Algebra II*

Description: 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. Prerequisites: Algebra I, Geometry, Algebra II, and approval by the Mathematics Department.

Precalculus

Credits: 1

Prerequisite: *Geometry and Algebra 2 with a grade of B or above*

Description: 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. Prerequisites: Algebra I, Geometry, Algebra II, and approval by the Mathematics Department.

Calculus

Credits: 1

Prerequisite: *Precalculus*

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. Prerequisites: Algebra I, Geometry, Algebra II, and approval by the Mathematics Department.

AP/Calculus AB

Credits: 1

Prerequisite: *PreCalculus with a grade of B+ or above*

Description: 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*

Description: 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 grade of B+ or PreCalculus with a grade of B or above*

Description: 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 statistic 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:

Science Department aims to create a learning community to support student achievement of the learning standards 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 Science Department course offerings are designed to ensure the learning of science for all 9-12 students by providing equitable access to exemplary teachers, inquiry-centered curriculum and instruction, standards-based assessments, and a wealth of resources and community support.

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 a personal interest in and an understanding of the impact of science on society as a whole. The normal sequences of courses are as shown below.

Integrated Science

Credits: 1

Prerequisite: Completion of 8th grade science

Description: 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 the more advanced science courses which they will have in the future at Putnam Science Academy. Topics include the elements and 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 the 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 lab equipment which they may not have ever used before.

Environmental Science

Credits: 1

Prerequisite: Integrated Science

Description: Environmental Science course examine the mutual relationships between organisms and their environment. In studying the interrelationships among plants, animals, and humans, these courses usually cover the following subjects: photosynthesis, recycling and regeneration, ecosystems, population and growth studies, pollution, and conservation of natural resources.

Biology

Credits: 1

Prerequisite: Integrated Science

Description: Biology course 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. The major themes 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. The teaching team utilizes a variety of instructional techniques to accomplish course objectives.

Honors Biology

Credits: 1

Prerequisite: B+ or higher in prior science course and administrative/teacher approval

Description: 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 an intense, comprehensive course of study. Class discussions focus on core foundations and recent developments in biological science. Classes each cycle include regular meetings and a double period of laboratory experience. The course helps to prepare students for the SAT 2 - Biology Test.

AP/Environmental Science

Credits: 1

Prerequisite: Honors Biology and Chemistry with a grade of B+ or above with administrative/teacher approval

Description: AP Environmental Science course 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 science as a process, 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.

AP Biology 2

Credits: 1

Prerequisite: *Honors Biology and Honors Chemistry with a grade of B+ or above and administrative/teacher approval*

Description: Adhering to the curricula recommended by the College Board and designed to parallel college level introductory biology courses, AP Biology courses stress basic facts and their synthesis into major biological concepts and themes. These courses cover 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 courses include college-level laboratory experiments.

Molecular Genetics

Credits: 1

Prerequisite: *Biology with a grade of B or above and administrative/teacher approval*

Description: Plants and their relationships to humans and the biosphere: plant structure and function, growth and development; plant genetics and biotechnology; plant diversity and evolution; practical and economic uses of plants.

Earth Science

Credits: 1

Prerequisite: *Administrative/teacher approval*

Description: Earth Science course offers insight into the environment on earth and the earth's environment in space. While presenting the concepts and principles essential to students' understanding of the dynamics and history of the earth, these courses usually explore oceanography, geology, astronomy, meteorology, and geography.

Chemistry

Credits: 1

Prerequisite: *Administrative/teacher approval*

Description: Chemistry course involves studying the composition, properties, and reactions of substances. These courses typically explore such 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 administrative/teacher approval

Description: 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 equilibria. 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, which they would be expected to aim to complete. An investigative practical project is included in year cycle. Students are encouraged to develop higher order thinking and problem solving skills, as well as link chemical concepts with other science and engineering.

AP/Chemistry

Credits: 1

Prerequisite: Honors Chemistry and Algebra 2 with B+ or above and administrative / teacher approval

Description: Following the curricula recommended by the College Board, AP Chemistry course 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.

Physics

Credits: 1

Prerequisite: Algebra 1 with a grade of B or above and administrative/teacher approval

Description: 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 the context of the content standards for Mechanics, Thermodynamics, Waves and Sound, Light and Optics, Electricity and Magnetism and Atomic & Nuclear Science. Students will be ready for AP Physics based on their passing grade.

Honors Physics

Credits: 1

Prerequisite: *Honors Algebra 2 with a grade of B+ or above, or administrative/teacher approval*

Description: 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 is included in each cycle. This course is excellent preparation for the SAT 2 - Physics Achievement Test.

AP/Physics 1

Credits: 1

Prerequisite: *Honors Physics and Honors Algebra 2 with grades of A-, and/or administrative/teacher approval*

Description: 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 terminal course including a laboratory component and is not the usual preparation for more advanced physics and engineering courses. However, the 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. Physics B seeks to be representative of topics covered in similar college courses, as determined by periodic surveys. Many colleges and universities include additional topics such as special relativity. Some AP teachers may wish to add such supplementary material to an AP Physics B course. Many teachers have found that a good time to do this is late in the year, after the AP Exams have been given.

AP/Physics 2

Credits: 1

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

Description: 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 the AP Physics C: Mechanics course 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. The AP Physics C: Mechanics course 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.

Scientific Research and Design

Credits: 1.0

***Prerequisite:** Satisfactory completion of two science courses or administrative/teacher approval.*

Description: 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 that are designed to answer testable questions. Embedded standards for Technology & 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 grade of C+, and/or administrative/teacher approval*

Description: 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 grade of A- or higher and/or administrative/teacher approval*

Description: 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 administrative/teacher approval

Description: 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. We will also study the diseases that affect the brain and read about current research topics throughout the course.

Botany

Credits: 1

Prerequisite: Biology recommended and/or administrative/teacher approval

Description: Botany is a branch of biology, and 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 area. Both hands on laboratory and outdoor experiences will accompany in classroom activities.

SOCIAL STUDIES COURSES

Introduction:

The Social Studies Department aims to prepare students for their future roles as voting citizens of a democratic world power. 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 present day world, in both the United States and elsewhere. They will be assisted in developing and applying the intellectual and analytical tools of the social sciences to deepen and broaden their understanding of past trends, current events, and potential future developments

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-year requirement. The following chart depicts this department's course offerings.

College World History since 1945

Credits: 1

Prerequisite: World History 1 and 2

Description: The course will be divided into three general topics: 1) The Cold War and its Legacies, 2) Lesser Developed Countries: Independence, Decolonization, and Dependency Theory, and 3) Religions and the Middle East. During each of these units we will try to be sensitive to the complexity of most issues; economies, resources, culture, religion, language, the military, demographics, geography, historical context, and still other factors often affect government and individual objectives and decisions and everyday life.

In this class you will be asked to evaluate themes like: components of decision making; the differences between perceptions and reality; the role of culture in domestic and international relations, compatibility of tolerance and ideology; tension between rights of individual and society; the relationship between technology and policy; strengths and weaknesses of mono-causal arguments; debates about structures or individuals as primary causes of events; components of nationalism; and applicability of stereotypes.

Honors Social Science

Credits: 1

Prerequisite: Teacher/administrative approval

Description: 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 required.

Introductory College United States History

Credits: 1

Prerequisite: *United States History*

Description: This course is a survey of American history from prehistory 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*

Description: 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 prehistoric times and the origins of man to the Renaissance and Reformation. The course takes a chronological approach to history while continuously examining historical themes and essential questions necessary for a comprehensive understanding of the development of world civilizations and the impact their contributions had on humanity. In addition, students will investigate the impact that religion, geography, art, politics, and economics, had on the culture 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: *At least a B- in World History 1*

Description: World History 2 surveys the major historical events of the Global Community from 1600 C.E. to the present. 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 study the rise of the nation state in Europe, the French Revolution, and the economic and political roots of the modern world. They study the origins and consequences of the Industrial Revolution, 19th century political reform in Western Europe, and imperialism in Africa, Asia, and South America. They will explain the causes and

consequences of the great 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 in many parts of the world.

European History

Credits: 1

Prerequisite: *World History 1 and 2*

Description: European History is a semester course that studies European History from 1450 to the present with specific emphasis on the intellectual and cultural, political and diplomatic, and social and economic developments that have shaped modern Europe. Students will then have the contextual awareness necessary for understanding 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. In forming such an understanding, students will acquire and use skills indicative of historical scholarship including critical inquiry, analysis, synthesis, interpretation, and argumentation in both verbal and written mediums.

Ancient Civilizations

Credits: 1

Prerequisite: *Teacher/Administrative approval*

Description: Ancient Civilizations course provides a survey of the evolution of society from the ancient Middle East through Greek and Roman civilizations. Typically, in this course, 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 read significant amount of primary sources as well as secondary accounts and interpretations.

World Cultures

Credits: 1

Prerequisite: *Teacher/Administrative approval*

Description: This course is a people-centered study involving an in-depth look at the world's major cultures using the 5 geographic themes. The study of each 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, economic life, political trends, and the intellectual and artistic accomplishments of men and women within the culture. The study of each of the cultures will be supplemented by the development of reading, writing, research, geography, critical thinking, study skills/note-taking, technology use and presentation skills.

Honors World Cultures

Credits: 1

Prerequisite: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: This course places intense emphasis on development of students' academic skills. Its content focuses on several important geographical and cultural areas of today's world. The first portion of this course familiarizes students with the basic ideas and concepts that are referred to throughout the remainder of the year. Geographical and cultural areas studied include the Middle East, Africa, the Indian Subcontinent, China, and Japan. For each area, the topics that may be examined include geography, history, culture, economy, government, and the worldly role of said areas. The pace, selection of materials, and instructional emphasis are intended to meet the goals outlined for this level. Before entering this course, parents and student should consider the recommendation of the teacher and the department head carefully.

Modern World History

Credits: 1

Prerequisite: Teacher/Administrative approval

Description: Modern World History course provides an overview of the history of human society in the past few centuries—from the Renaissance period, or later, to the contemporary period—exploring political, economic, social, religious, military, scientific, and cultural developments. This course will be analyzing events and their impact on both the past and the present. Students will have the opportunity to work in a variety of learning situations—individually, in small groups, and as a large classroom. The curriculum will reflect the Secondary World History Standards established by Common Core Standards.

Modern World History - Honors

Credits: 1

Prerequisite: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: Modern World History course provides an overview of the history of human society in the past few centuries—from the Renaissance period, or later, to the contemporary period—exploring political, economic, social, religious, military, scientific, and cultural developments. This course will be analyzing events and their impact on both the past and the present. Students will have the opportunity to work in a variety of learning situations—individually, in small groups, and as a large classroom. Critical thinking skills such as decision making, problem solving, and cause and effect will be emphasized. The curriculum will reflect the Secondary World History Standards established by Common Core Standards.

United States History

Credits: 1

Prerequisite: Teacher/Administrative approval

Description: U.S. History course 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. This course shall cover such developments in United States History as the Civil War including the Colonial Period; the American Revolution; evolution of The United States Constitution; as well as the divisions and causes 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: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: Rigorous honors curricula that move at an accelerated pace through the course material and include especially challenging reading and writing assignments. Honors US History is a traditional survey course, organized chronologically, that exposes students to a wide- range of issues, trends, and individuals. This course shall cover such developments in United States History as the Civil War including the Colonial Period; the American Revolution; evolution of The United States Constitution; as well as the divisions and causes 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. These courses are 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.

AP/US History

Credits: 1

Prerequisite: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: Following the College Board’s suggested curriculum designed to parallel college-level U.S. History course, 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 recent past. This course has two principal aims: to give a good basic grounding in the foundations of society in the United States, and to introduce students to the discipline of history, and the process of thinking historically. Some of the themes explored will include the exploration, conquest, and settlement of the land; the impact of the environment on culture, and vice-versa; the formation of national identity, and the question of American “exceptionalism.” This course will also examine the history of the United States from the end of the Civil

War to the present. 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 global contexts. Students will explore the ways in which we learn and narrate stories of America's past, individually and collectively, and address the profound consequences this holds not only for general historical understanding and practice, but also for analyzing the nation's present, future, and the wider workings of power. This class draws upon a variety of texts, including narrative history, journalism, government documents, legal decisions, visual culture, fiction, music, material culture, and documentary and feature film. This course aims to prepare students for AP US History Exam in May.

Early College Experience United States History (UConn)

Credits: 1

Prerequisite: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: This course has two principal aims: to give a good basic grounding in the foundations of society in the United States, and to introduce students to the discipline of history, and the process of thinking historically. Some of the themes explored will include the exploration, conquest, and settlement of the land; the impact of the environment on culture, and vice-versa; the formation of national identity, and the question of American "exceptionalism." This course will also examine the history of the United States from the end of the Civil War to the present. 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 global contexts. Students will explore the ways in which we learn and narrate stories of America's past, individually and collectively, and address the profound consequences this holds not only for general historical understanding and practice, but also for analyzing the nation's present, future, and the wider workings of power. This class draws upon a variety of texts, including narrative history, journalism, government documents, legal decisions, visual culture, fiction, music, material culture, and documentary and feature film. Students will receive Social Studies credits from the University of Connecticut upon successful completion of this course.

Government

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: This course is a study of the origins, development, structure, and functions of national governments. Topics include foundations of government, political behaviors, the branches of the government, comparative political and economic systems, and participation in state and local government. The relationship between local, state, and federal governments are also discussed. Upon completion, students should have an understanding of the basic concepts and principles of government.

AP/ US Government & Politics

Credits: 1

Prerequisite: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: Following the College Board's suggested curriculum designed to parallel college-level U.S. Government and Politics courses, 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 national government, and civil rights and liberties. This course is a full year course in United States government and politics that is equivalent to a college level course. It offers an analytical perspective on government and politics in the United States. AP GoPo explores the formal and informal structure of the U.S. Government and the politics that influence its implementation. The purpose of this course is to interpret and analyze literature and data to recognize how our government functions while becoming acquainted with the variety of theoretical perspectives and explanations for various behaviors and outcomes. 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. This course aims to prepare students for AP Exam in May.

Advanced Placement World History

Credits: 1

Prerequisite: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: Following the College Board's suggested curriculum designed to parallel college-level World History courses, AP World History courses 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. Students learn many facts, but also the critical thinking skills necessary to analyze historical evidence. Five themes will be used as a frame of reference in the chronological study of our world's history; these themes are: 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, including the causation of events as well as the major effects of historical developments, the interconnectedness of events over time, and the spatial interactions that occur over time that have geographic, political, cultural, and social significance. It is important for each student to develop the ability to connect the local to the global, and vice versa. 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.

Advanced Placement Human Geography

Credits: 1

***Prerequisite:** B+ or above in a prior Social Studies course and teacher/administrative approval*

Description: Following the College Board’s suggested curriculum designed to parallel college-level Human Geography courses, 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 science and practice. Students will also learn about the methods and tools geographers use in their research and applications. The particular topics studied follow the five college-level goals that build on the National Geography Standards developed in 1994 and revised in 2012.

AP/European History

Credits: 1

***Prerequisite:** B+ or above in a prior Social Studies course and teacher/administrative approval*

Description: Following the College Board’s suggested curriculum designed to parallel college-level European History courses, AP European History course examines European civilization from the High Renaissance period to the recent past 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 abilities to analyze historical evidence and to express that understanding and analysis in writing. This course aims to prepare students for AP European History exam in May.

Psychology

Credits: 1

***Prerequisite:** Teacher/Administrative approval*

Description: Psychology course 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 psychology. Questions to be answered will be “Where do thoughts and memories come from? What are emotions? And 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 psychological tips that they can use every day, like how to cope and reduce stress.

AP/Psychology

Credits: 1

Prerequisite: B+ or above in a prior Social Studies course and teacher/administrative approval

Description: Following the College Board's suggested curriculum designed to parallel college-level Psychology course, 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 psychological facts, principles, and phenomena associated with each of the major subfields within psychology. 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. In this college-level course, the psychological facts, principles, and phenomena associated with each major area of psychology will be studied and students will enhance their scientific critical thinking skills.

Civil Rights

Credits: 1

Prerequisite: Completion of US History and/or teacher/administrative approval

Description: 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: Teacher/ Administrative approval

Description: Current Issues course 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:** B- or above in prior Social Studies course and Teacher/ Administrative approval*

Description: Economics course 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 and B- or better average in Math and English and Teacher/ Administrative approval*

Description: Following the College Board's suggested curriculum designed to parallel college-level macroeconomics, AP Macroeconomics course 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, inflation and unemployment. The rate of economic growth in our economy and what The Federal Reserve should do about interest rates will be discussed. Students will learn how to analyze various economic indicators that depict the state of our economy. Fiscal and monetary policy will be taught. This one semester college-level course provides a foundation for a course in AP Microeconomics. The course will prepare students to take the AP Macroeconomics Exam given in May.

AP/ Microeconomics

Credits: 1.0

***Prerequisite:** Successful completion of AP Macroeconomics and Teacher/ Administrative approval*

Description: Following the College Board's suggested curriculum designed to parallel college-level microeconomics, AP Microeconomics course 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. This course will prepare students to take the AP Microeconomics Exam given in May.

Introduction to Business

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: 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: Teacher/Administrative Approval

Description: 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 (SAT/ACT/TOEFL/IELTS scores) 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 survival leading to successful financial planning.

International Business

Credits: 1

Prerequisite: Introduction to Business with a grade of C or above

Description: 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: Teacher/Administrative Approval

Description: 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, Student's 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: Teacher/Administrative Approval

Description: An introduction to developmental psychology, the 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: theories of development, genetics and development, 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

Description: This introduction 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 great emphasis on issues pertaining to international relations and diplomacy, the study of foreign languages has become very important. 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. Three to four years of the same language is highly recommended by the most selective colleges.

Spanish 1

Credits: 1

Prerequisite: Teacher/Administrative Approval

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

Spanish 2

Credits: 1

Prerequisite: Spanish 1

Description: 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 and reading comprehension. Students read for information and for pleasure, compose short compositions, and engage in conversation. Students continue learning about the culture of the country of the target language.

Spanish 3

Credits: 1

Prerequisite: Spanish 2

Description: The goal of this course is to provide a firm basis in all the skills that the student has been acquiring for ease in oral and written communication with native speakers of the target language. Students add significantly to their vocabulary, to their understanding of the language, and to their writing skills by reading progressively more difficult works, discussing these works, and writing about the readings. Speaking assignments give the students the opportunity to develop their oral proficiency.

Spanish 4

Credits: 1

Prerequisite: Spanish 3

Description: In Spanish 4 course, 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 so that they can maintain simple conversations with sufficient vocabulary and an acceptable accent, easily 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.

French 1

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: French 1 course is designed for students who has no prior knowledge of and/or who have had less than a full school year of previous formal exposure to French language. 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. French culture is introduced through the art, literature, customs, and history of the French-speaking people.

French 2

Credits: 1

Prerequisite: French 1

Description: French 2 course builds upon skills developed in French I, 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, and comprehend the language when spoken slowly. Students usually explore the customs, history, and art forms of French-speaking people to deepen their understanding of the culture(s).

French 3

Credits: 1

Prerequisite: French 2

Description: French 3 course focuses on having students express increasingly complex concepts both verbally and in writing while showing some spontaneity. 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.

French 4

Credits: 1

Prerequisite: French 3

Description: French 4 course 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.

Mandarin 1

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: This introductory course is designed for students who has 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 paragraph with Pinyin and engage in simple conversations. The traditional and significant Chinese culture will be introduced, such as holidays, food, and activities.

Mandarin 2

Credits: 1

Prerequisite: Mandarin 1

Description: 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 presentation in some topics, communicate effectively with native Mandarin Chinese speakers in daily conversations, and understand Chinese poem or songs. Students continue learning about the culture of the country of the target language.

Greek 1

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: 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:

Personal access to computing power is increasing. Access to information and channels of communication are important aspects of life in our society. The power of computers as a medium for providing and communicating information has made the ability to use information technology a vitally important skill. Our school offers students computer skills, graphics editing, web design, database programming and visual programming courses according to their grades. Each end of the year, our students take final integrated project about what they learn during the year. Our programs are designed for students to develop their design, analyze and programming capabilities.

Digital Media

Credits: 1

Prerequisite: None

Description: 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

Description: 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

Description: 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

Description: 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

Description: 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 that, 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: *As an introductory course, no previous experience with digital design is necessary*

Description: 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.*

Description: 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*

Description: 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*

Description: 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

Description: 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.

3D Modeling & Animation

Credits: 1

Prerequisite: Algebra 1 or/and teacher/administrative approval

Description: 3D Modeling and Animation are integral elements of the communications industry, including film, video, games, digital storytelling, industrial design and architecture. This course focuses on elevating the student's understanding of the medium by combining the technical craft with observation and intuitive expression. Using industry standard tools, students learn to fuse artistic and technical knowledge while designing elements for video, television, film, rich and mobile media, virtual environments and other emerging forms of human/computer interaction.

Robotics

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: The world will soon be run by the 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, follows 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: Teacher/Administrative Approval

Description: 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 object 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.

Introduction to 3D Modeling

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: 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.

Introduction to Game Design

Credits: 1

Prerequisite: Teacher/Administrative Approval

Description: 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 fundamentals of the production of video games by producing design documents that instruct a team on how to create their game.

VISUAL AND PERFORMING ARTS COURSES

Introduction:

The goal of the Visual & Performing Arts department is to explore a variety of media, ideas and techniques through the production of artwork and the discussion of art history. Students will develop an appreciation for the arts and an understanding of the ways art communicates ideas.

Introduction to Painting

Credits: 1

Prerequisite: None

Description: This course provides the foundation of painting, its application and materials. It focuses on the color theory and the processes of wet-into-wet, dry-brush paint and application. This course will expose students to the basics of painting including materials, techniques, craft, and mediums. The subject matter will include still life, landscape, media experimentation, and exploration of individual creative expression.

Introduction to Art

Credits: 1

Prerequisite: None

Description: This introduction course gives students the foundation to prepare them for further high school art experiences. This course introduces students to the materials, techniques, concepts, and processes essential to understanding other art electives such as drawing, painting, the elements and principles of design, color theory, and keeping a sketchbook.

Expressive Painting

Credits: 1

Prerequisite: Introduction to Painting

Description: This course is an extension of the Introduction to Painting 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 painting, including materials, techniques, craft, and mediums, along with conceptual ideas of what makes a painting a "painting". The subject matter will include still life, landscape, media experimentation, and exploration of individual creative expression.

Art History and Foundation

Credits: 1

Prerequisite: None

Description: Art History course introduces students to significant works of art, artists, and artistic movements that have shaped the art world and have influenced or reflected periods of history. These courses often emphasize the evolution of art forms, techniques, symbols, and themes. In this course you will explore the concepts of art. Using a variety of mediums including pencil, charcoal, paint and clay you explore the visual language of art. Through the creation of original works of art that demonstrate important visual concepts like contrast, pattern, repetition, unity, emphasis and balance you will develop an understanding of the concepts. You will identify the use of the principles of design in history works and the work of your peers. You will analyze and interpret the work of the class and famous works of art to develop an understanding of how art communicates ideas and emotions.

Creative Art

Credits: 1

Prerequisite: Introduction to Art

Description: 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 electives 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, media experimentation, and exploration of individual creative expression.

Creative Art 2

Credits: 1

Prerequisite: Creative Art

Description: This course expands upon foundational art skills learned in the Creative Art 1 course. This class provides students with the necessary skills to think independently and subjectively about art and the world around them. Students will be able to synthesize and relate knowledge and personal experiences to art making. Through both instructed learning and self exploration students will begin to connect artistic ideas and works in a societal, cultural, and historical context.

Introduction to Drawing/Painting/Printmaking

Credits: 1

Prerequisite: None

Description: In the Introduction to Drawing/Painting/Printmaking class, students learn basic drawing and rendering skills. They are given projects that teach them how to look. Students work from still life and photographs, and experiment with several drawing and coloring techniques. They will learn to transfer images to scale using a grid system. By the end of the term, each student completes numerous pieces in a variety of sizes, styles, and mediums. Students are encouraged to push the media by developing a unique and creative relationship with it.

Advanced Drawing/Painting /Printmaking

Credits: 1

Prerequisite: Approval of the instructor and/or department supervisor

Description: Drawing/Painting/Printmaking course is comprehensive course. The Advanced Painting and Drawing class is designed for responsible, creative and self-motivated students with good drawing and painting skills. Students are expected to have an understanding of the human figure, color, composition, and the use of different mediums. In keeping with this attention on two-dimensional work, students typically work with several media (such as pen-and-ink, pencil, chalk, watercolor, tempera, oils, acrylics, and so on). Each student works on independent projects chosen either by themselves or in collaboration with the painting instructor. Students are expected to keep a personal sketchbook and are encouraged to challenge themselves and experiment with materials.

Sculpture

Credits: 1

Prerequisite: Approval of the instructor and/or department supervisor

Description: Sculpture course is comprehensive course that focuses on creating three-dimensional works. Students typically work with several media (such as clay, ceramics, wood, metals, textiles, and so on), but some courses may focus on only one medium. Ceramic Processing/Production courses include studying the properties of ceramics and heat resistant composites and using these materials to construct usable products. This course enables students to experience the process of translating an idea into a finished product, with instruction in planning, designing, selecting materials, and using tools and machines.

Ceramics

Credits: 1

Prerequisite: Approval of the instructor and/or department supervisor

Description: Ceramic Processing/Production course includes studying the properties of ceramics and heat resistant composites and using these materials to construct usable products. These courses enable students to experience the process of translating an idea into a finished product, with instruction in planning, designing, selecting materials, and using tools and machines.

Photography and Digital Photography

Credits: 1

Prerequisite: Approval of the instructor and/or department supervisor

Description: Photography course exposes students to the materials, processes, and artistic techniques of taking artistic photographs. Students learn about the operation of a camera, composition, lighting techniques, depth of field, filters, camera angles, and film development. The course may cover black-and-white photography, color photography, or both. As students advance, the instruction regarding the creative process becomes more refined, and students are encouraged to develop their own artistic style. This course also covers major photographers, art movements, and styles.

Digital technology has had the most profound effect on imaging, since the invention of photography. In Digital Photography, students will have an opportunity to explore new frontiers as they examine the interaction of traditional photographic methods along with computer technology. Students can work in black and white or color. They can scan images into computers and take advantage of the one million plus colors that are available on computers. By using layers, students will be able to combine images. Final prints may be printed on photographic papers or a variety of other computer papers, allowing for additional manipulation of images. This course shall be a team-teaching effort between the photography and computer instructors.

Metal and Wood Processing/Production

Credits: 1

Prerequisite: None

Description: Metal and Wood Processing/Production course includes studying the properties of metals, woods, and composites and using these materials to construct usable products. This course enables students to experience the process of translating an idea into a finished product, with instruction in planning, designing, selecting materials, and using tools and machines.

Theater Arts 1

Credits: 1

Prerequisite: None

Description: This introductory course is designed to expose students to the process of creating theatre. Students explore acting techniques such as voice projection and movement, dramatic literature, marketing, set design and costumes. The course concludes with a showcase production that allows students to apply the skills and knowledge obtained throughout the course. This course is a general introduction to drama including acting technique, improvisation, characterization, and basic blocking. A formal performance in front of an audience at the end of the course is a requirement for all students enrolled in the course. This formal performance will count as the final exam. This course is designed to enhance theatre appreciation.

MUSIC COURSES

Introduction:

The purpose of music courses are to develop and grow interest and skill of various instruments. Students do not need any prior knowledge of music to participate in music classes.

Individual Technique—Instrumental Music

Credits: 1

Prerequisite: None

Description: Individual Technique—Instrumental Music course provides individuals with instruction in instrumental techniques. This course can be conducted on either an individual or small group basis.

Individual Technique—Vocal Music

Credits: 1

Prerequisite: None

Description: Individual Technique—Vocal Music course provides instruction in and encourage the development of vocal techniques (including aural development) other than the ability to sing in groups. These courses may be conducted on either an individual or small group basis.

Chorus

Credits: 1

Prerequisite: None

Description: Chorus course provides the opportunity to sing a variety of choral literature styles for men's and/or women's voices and are designed to develop vocal techniques and the ability to sing parts.

Music Theory

Credits: 1

Prerequisite: None

Description: Music Theory course provides students with an understanding of the fundamentals of music and include one or more of the following topics: composition, arrangement, analysis, aural development, and sight reading.

PHYSICAL EDUCATION AND HEALTH COURSES

Introduction:

Physical Education is a required subject for all students in grades K-12. When students reach the commencement level of the learning standards for physical education, they will have the knowledge and skills to participate in a variety of healthy activities; understand and appreciate the benefits of maintaining a healthful lifestyle; understand how to evaluate and access resources in their community to pursue a healthy and active life; and will be aware of the many career opportunities available in this field.

Science of Nutrition

Credits: 1

Prerequisite: None

Description: 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

Description: 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

Description: 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*

Description: 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*

Description: 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*

Description: Individual/Dual Sports course provides 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/PERSONALIZED 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.

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.

***In addition to the courses above, Putnam Science Academy has partnered with Quinebaug Valley Community College for our students to take college level courses at a discounted prices. 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.