

New Course Descriptions 2017-2018

ARTS

Honors Digital Media - Year Long

Prerequisite: Instructor's permission; previous course in photography or film. The focus in the Fall would be still photography with skill building projects, field trips, and critiques. Winter term, the emphasis would be on sequential photography and /or film. Spring term, students will concentrate on projects of a more independent nature and can work in still or video media.

Songwriting - Spring

Prerequisite: Basic proficiency on piano or guitar is expected.

This course focuses on the art of songwriting, combining the elements of creative self-expression, lyric writing, notation and leadsheet, technical proficiency, and collaboration. Live and digital musicians are welcome. Students will create a portfolio of work in varying styles, culminating in an independent production of a mini album.

Music Technology - Spring

This course provides a practical guide to music technology equipment and sound including everything from choosing equipment to selecting the right type of microphone and finding your way around a typical live sound mixer while focusing on recording and sound design. Using digital audio sequencing and the basic principles of audio recording, students will record, edit, mix, and burn their work to a CD. Pro Tools, Logic Pro X, and Garageband software will be used to compose and record music. Students may use the included loops or create their own backgrounds for improvisation, movie soundtracks, and any genre of music. Knowledge of Macintosh computers is helpful, but not required.

Painting 2 - Fall, Winter

Prerequisite: Painting 1

A continuation of Painting 1 with the focus on developing more specific techniques using paint. Students will have a choice to use water or oil paints to create work, and the student will generate the subject of the paintings. The student will have to make a plan for their work that develops not only their technique in painting but also their voice. They will need to articulate the rationale for their imagery and use continued research of artists and inspirational material to support their work.

Animation - Winter

This course is an introduction to the animation process, and students will work together to create a variety of short projects. We will begin with basic flipbook and stop-motion techniques and move towards using software to animate drawings digitally. This course will put an emphasis on observing motion carefully and using sequential imagery to communicate ideas. We will observe and critique each other's work with the goal of better understanding both the challenges and possibilities of setting artwork in motion.

Design on paper — Winter

Students will develop a visual language to express ideas and manipulate the perception of the viewer. They will investigate relationships of perception, process, and presentation, using imagery and text (both found and created). Students will develop an understanding of how composition, color, and images are used and manipulated and use this knowledge as they create designs on paper.

The Figure — Spring

Students will learn to use the body as form to create visual art to express aspects of the human condition. Within this course, we will use a variety of materials to create works on paper; drawing, collage, and painting. Using the figure, students will develop their skills in gesture and weight/balance, learn to handle proportion, and organize and analyze optical shape relationships and

their design. Most days will be spent drawing from a live model, and then using sketches to create finished pieces of work. through reflection, the students will develop their voice and use these ideas for a body of work.

ENGLISH

Dreaming In American

Fall: Dreams Deferred

Winter: The Things We Carry

Spring: The World and We

This course will explore the question *What is the promise of the American Dream and who gets their dreams to come true?* Each term will focus on a resonant theme in American literature. The texts students read will include the novels Native Son, The Things They Carried, Between the World and Me, Beloved, Girl at War, and The Beans of Egypt, Maine, as well as films like *Tig*, *On the Waterfront*, *Brokeback Mountain*, and spoken word and stand-up comic performances.

Searching for "You" and Success

Fall: Defining Success

Winter: Searching for You

Spring: Sports in Literature – a Metaphor for Success

This course will explore the question *What does it mean to be a successful person and to have a successful life? What skills and attributes are required?* Students will record and reflect on their own success. Self-assessment will be integral to their work throughout the year. The literature students read will examine the stories of people who are or are not successful. Each term students will read a wide variety of texts that challenge them to think critically and creatively with a growing tolerance for ambiguity. Texts will include Native Son, The Things They Carried, The Natural, as well as TED talks, spoken word performances, and selected short films.

Mythological Literature

Fall: Origins

Winter: Tales

Spring: Contemporary Transformations

In this course, students will explore the literature of ancient mythology and how it has evolved over the years. How reading informs writing and how literature is a conversation that spans time and location are the central ideas of this course. The course will begin with texts such as The Odyssey, Metamorphoses, and The Thousand and One Nights. Exploration of this kind of story will continue with examining works by Hans Christian Anderson, The Brothers Grimm, and Aesop. In the spring term, students will read more contemporary novels to see how these myths have been transformed and re-imagined. Authors include Toni Morrison, J.R.R. Tolkein, Hermann Hesse, and Margaret Atwood.

Literature of War and Trauma

Fall: WWI

Winter: WWII

Spring: Vietnam and Other Modern Conflicts

This course will focus on a central question: *How and why do we create art in the wake of unimaginable violence and trauma?* Students will travel from "The Great War" to the present, examining texts that explore the violence, contradiction, and healing of wartime. How does literature affect understanding of the human condition and capture experiences that, in and of themselves, cannot be understood? Texts will include All Quiet on the Western Front, One of Ours, Catch 22, Slaughterhouse Five, The Things They Carried, and Billy Lynn's Long Halftime Walk, as well as films like *Saving Private Ryan* and *Restrepo*.

Utopia/Dystopia

Fall: Governing Systems/Human Nature

Winter: Technological Systems

Spring: Evolution/Environmental Systems

Throughout the year, students will consider the ideas of utopia and dystopia in theory and in text. At the beginning of each term, students will consider the idea of utopia as it relates to the theme or topic of the term. As the term progresses, they will turn to looking at the breakdown of utopia and idealism into forms of dystopia related to the same theme or topic. Texts will include Brave New World, 1984, The Handmaid's Tale, Player Piano, and Station Eleven, as well as films like *Blade Runner* and *Avatar*.

HISTORY

Public Policy and the Environment – Spring

This one-term interdisciplinary science and history course will focus on public policy and the environment. Students will investigate the relationship between the government and public spaces, ecosystems and resources. Students will study how governments, at all levels, regulate, promote and secure various resources and ecosystems through policy and enforcement. Additionally, students will see the impact and consequences of government action and inaction on the environment and the local, regional and global level. This course will consist of conducting labs, doing research in the field and in the library, writing analytical essays, using case studies and participating in simulations.

LANGUAGE

Honors Spanish Literature – Year Long

Prerequisites: Department recommendation and a grade of B- or above in Spanish 4 Honors or Honor Spanish Language and Culture This is a fully immersive course in which students achieve a high level of linguistic proficiency and cultural understanding.

All forms of communication are in Spanish, both inside and outside the classroom. These include assignment details, e-mail, and extra-help. Students are pushed to attain a high-level of speaking proficiency and reading comprehension as they explore novels, short stories, and poetry by Hispanic writers. Authors may include Isabel Allende, Julio Cortázar, Laura Esquivel, Gabriel García Márquez, Ana Maria Matute, and Pablo Neruda. Socratic seminars are an essential feature of this course. Students compose essays and analysis based on the literature as well as create stories of their own. The rigor of this course requires a passion for Spanish and a willingness to take intellectual and creative risks.

MATH

Honors Computer Science – Year Long

Prerequisites: Permission of instructor and enrolled or have completed Honors Math 4

This upper-level year-long course designed primarily for juniors and seniors, is rigorous and includes a significant amount of work. Each week, students are expected to complete a programming assignment in addition to their daily homework. Students learn how to program using the programming language Java. Students learn all of the basic concepts of object-oriented programming while learning problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms) and analysis of potential solutions.

Computer Science 1: Programming – Fall

Prerequisites: Permission of instructor and enrolled or have completed Math 4 Advanced

This course is an introduction to computer science and computer programming using the language of Java. After students are introduced to the fundamental concepts of object-oriented programming, they go on to study how to design and write well-written programs incorporating the use of algorithms. At the same time, they are learning problem solving techniques, design strategies and methodologies, basic organization of data (data structures), and analysis of their solutions.

Computer Science 2: Advanced Programming - Winter

Prerequisite: Computer Science 1

This course builds on the concepts covered in Computer Science 1, which is a prerequisite. Students continue learning the Java language in order to focus on developing algorithms and advanced object-oriented programming concepts in the pursuit of writing well-written computer programs. In the process, students develop advanced problem solving skills, sophisticated design strategies and methodologies while incorporating advanced data structures into their programs. Students continue to learn how to analyze their programs in order to determine if they are well written and efficient.

Computer Science 3: Advanced Object-Oriented Programming - Spring

Prerequisite: Computer Science 1 and Computer Science 2

This course builds on the concepts covered in Computer Science 2. Students continue using the Java language to focus on using more advanced data structures and algorithms when designing and writing their programs. There is an emphasis on learning and implementing advanced concepts of object-oriented programming during program design. At the same time, students continue to develop problem solving skills and design strategies and methodologies. Students learn sophisticated techniques for determining if their programs are efficiently written.

Honors Advanced Topics in Mathematics

Prerequisite: Honors Math 4 or Math 4 Advanced

The year-long upper level math course consists of three terms which cover distinct topics in mathematics. In the fall we will study linear algebra which is a field of mathematics used in engineering, science, economics and computer science. The winter will be an advanced statistics course which will focus on collecting and study data and the many mathematical means which provide a basis for inferences and analyses. The spring will be projective geometry, which is a non-Euclidean geometry. There will be a variety of assessments which will include projects, modeling, keeping notebooks, along with tests and quizzes.

Advanced Topics in Mathematics: Linear Algebra

Fall Term

Prerequisite: Honors Math 4 or Math 4 Advanced

Linear Algebra is a highly applicable field in mathematics that is useful in mathematics, engineering, science, economics, and computer science. Solving systems of linear equations is a basic tool of many mathematical procedures used for solving problems. The student will become competent in solving linear equations, performing matrix algebra, calculating determinants, and finding eigenvalues and eigenvectors. Linear programming will also be touched upon using a project based learning model.

Advanced Topics in Mathematics: Advanced Statistics Winter Term

Prerequisite: Honors Math 4 or Math 4 Advanced

The term-long Statistics course will begin with a brief introduction in collecting data and studying distributions of categorical and quantitative variables. We will then study the z-distribution and central limit theorem, which will provide a basis for inferences of data. The bulk of the term will be focused on comparing proportions and means in multiple forms. Assessment of comprehension will be taken in the forms of weekly problem sets, quizzes and/or tests, and individual projects.

Advanced Topics in Mathematics: Projective Geometry Spring Term

Prerequisite: Honors Math 4 or Math 4 Advanced

Students in this course will be exposed to a non-Euclidean geometry. It will require that the students include in their thinking two different images of what happens at infinity. They will also have to think through what happens to familiar geometric figures as they are transformed by projections. This course will be more experientially based rather than a formal proof based math course. Students will need to keep a notebook of drawings with explanations of the ideas presented.

SCIENCE

Planet Earth: Plate Tectonics, Rocks, and Natural Disasters - Year Long

Prerequisite: Chemistry

The goal of this year long course is to study and understand the basic composition and structure of the Earth and apply this knowledge to Earth's processes and natural disasters. Initial topics investigated will include Earth's structure and composition as well as the theory of plate tectonics. These topics are explored through hands on activities and field work. The second portion of the course will be devoted to the study of Earth's natural hazards by examining the geological and physical processes behind them, as well as our ability to predict and manage them. In this unit, students will have the chance to learn about and research a major volcanic eruption, earthquake, tsunami, and hurricane of their choice. Students will be responsible for composing case studies for each of these events and are expected to incorporate their knowledge of the Earth and its processes into their discussions.

Ecology, Evolution, and Animal Behavior - Year Long

Prerequisites: Chemistry and Biology.

Ecology, Evolution and Animal Behavior is a year-long course that consists of Ecology in the fall term, Evolution in the winter term and Animal Behavior in the spring term. Students enrolled in the year-long Ecology, Evolution, and Animal Behavior course must take all three terms to receive full-year credit. Students wishing to take only one or two of the terms should enroll in those individual term courses.

Public Policy and Environment - Spring

This one-term interdisciplinary science and history course will focus on public policy and the environment. Students will investigate the relationship between the government and public spaces, ecosystems and resources. Students will study how governments, at all levels, regulate, promote and secure various resources and ecosystems through policy and enforcement. Additionally, students will see the impact and consequences of government action and inaction on the environment and the local, regional and global level. This course will consist of conducting labs, doing research in the field and in the library, writing analytical essays, using case studies and participating in simulations.

Ecology - Fall

Prerequisite: Chemistry and Biology

Ecology is the study of the interactions between organisms and their environment. This course will serve as an introduction to ecological concepts and their applications, both abiotic and biological. In addition to discussing ecological concepts, the class will look at an overview of local and global environmental issues and examine individual, group, and governmental activities that are important for protecting natural ecosystems. Students will focus on the comparison of different ecological communities and ecosystems and learn methods of sampling and analysis. The laboratory will consist of field excursions and exercises related to the field experience and ecological techniques

Evolution - Winter

Prerequisite: Chemistry and Biology

This course stresses the relevance of evolution to all of biology and to real-world problems. The discussion of evolution as a collection of facts and as an ongoing research effort with the goal of understanding it as an observable process, especially as it relates to modern medicine and the treatment of disease, will be the focus of the course. Emphasis is placed on the theoretical underpinnings of modern evolutionary biology (mutation, selection, migration, and drift) that produce evolutionary change. Additionally, students are introduced to a variety of analytical and technical skills used for studying evolution. Topics covered include population genetics, the theory of evolution by natural selection, concepts of fitness and adaptation, genetic and developmental bases of evolutionary change, modes of speciation, molecular evolution, macro-evolutionary trends in evolution, the origins of life, and extinction, among others. Exposure to the tremendous diversity within this discipline will illustrate why evolution is viewed as the central unifying theme of biology.

Animal Behavior - Spring

Prerequisite: Biology

This term-long course is an introduction to the field of animal behavior. Basic principles derived from evolution, ecology, and development will be discussed, and these principles will be used to explain how and why animals behave as they do in particular situations. The course will focus on many important biological activities, such as foraging, communication, migration, predator-prey interactions, mating, and parental care. These concepts will be presented through various discussions, laboratory activities, and possibly field trips.