Burke Mountain Academy

2022-23 Course Catalog

Table of Contents

Humanities

English 8: American Literature

Eighth-grade American Literature, we will examine various stories that augment and highlight different aspects of life in America. The stories we will read shed light on social, political, and cultural phenomenons present in American history. This course will pay particular attention to cultivating skills that will build good habits and set students up for success. There will be a heavy emphasis on written work in this course, which will vary from essays to short responses. There will be time dedicated to refining and improving all aspects of the writing process, through deliberate action.

English 9: Literary Analysis

Literary Analysis will serve to establish essential skills high schoolers will need to cultivate in order to set themselves up for future success. This course will not only examine the literary themes and commonalities found in these books but will also dig into the historical context presented in these stories. This course will present opportunities to read novels, but also explore their historical context through primary and secondary sources. This course will present opportunities for students to develop annotation skills, develop strong critical thinking strategies, and the central focus of this course will be writing. Writing is an essential skill in any endeavor so, this course will have ample opportunities to construct strong written arguments. This course will build a strong foundation for the writing process, by dedicating time to thoughtfully engage in brainstorming, outlining, and drafting written work. While this class will lean heavily on written work, students will be expected to engage in discussion to develop a deep understanding of the content being addressed.

English 10: Dystopian Literature

Dystopian Literature is a tenth grade level English / Language Arts focused on developing critical thinking through monumental works of dystopian fiction. These works utilize trends in human psychology, society, and government to produce extreme scenarios that force readers to reflect on their own cultural and moral positioning. For instance, despite being published in 1932, Brave New World provides an insightful perspective on the rise of psychotropic medications and developing genetic engineering technologies. In addition to encouraging students to think critically and philosophically, these novels will be used as springboards for developing advanced writing skills through critical essays, research projects, and creative work.

English 11: Academic Writing

Dystopian Literature is a tenth grade level English / Language Arts focused on developing critical thinking through monumental works of dystopian fiction. These works utilize trends in human psychology, society, and government to produce extreme scenarios that force readers to reflect on their own cultural and moral positioning. For instance, despite being published in 1932, Brave New World provides an insightful perspective on the rise of psychotropic medications and developing genetic engineering technologies. In addition to encouraging students to think critically and philosophically, these novels will be used as springboards for developing advanced writing skills through critical essays, research projects, and creative work.

English 12

English 12 is a full year course that will have a distinctly different focus each trimester. In the first trimester, we will read David Sedaris' Me Talk Pretty One Day. Simultaneously, we will devote a good chunk of time to all aspects of college applications and athletic recruiting. In the second trimester, students will indulge themselves in the luxury and occasional terror of travel writing. Depending on the year, the books could be anything from Jon Krakauer's Into the Wild to Bill Bryson's A Walk in the Woods, to Alfred Lansing's classic, Endurance: Shackleton's Incredible Voyage to the Antarctic—or anything else that fits the bill in a given year. The final trimester is loosely entitled "Apes in Literature". The reading selections will be T. C. Boyle's notorious Konrad stories, Kafka's "A Report to the Academy", a selection from Darwin's The Descent of Man and, time permitting, additional readings consistent with the theme. As for the assignments, there are the usual reading comprehension assessments, essays long and short, and presentations. While the assignments themselves are standard in structure, they will reflect the occasionally eccentric nature of the readings and seek to push students to think independently rather than simply recite what they think will please the teacher.

Senior Writing Seminar

Literary Seminar is an advanced literary studies course intended to introduce students to high level literature from around the world. The course utilizes a college seminar structure and emphasizes discussion, collaboration, and independent research. While staples in the class have been Crime and Punishment and The Portrait of the Artist as a Young Man, this year will also include units on Nature Writing, Literature of the Arabian Peninsula, and the Cold War. Throughout the year, students will learn to examine these topics and texts through various critical and historical lenses to enhance their critical vocabulary and approach.

World History

This course begins with a study of the origin of the universe itself, as students entertain rival accounts of when and where 'history' effectively began. Through various media, students become acquainted with the universe's almost incomprehensible 13.5-billion-year history, along

with what evidence and reasoning have made the ‘Big Bang theory’ a matter of broad scientific consensus. Using Yuval Noah Harari’s Sapiens: A Brief History of Humankind as a throughline text, students explore the evolution of modern-day humans from their origins approximately 300,000 years ago, giving particular attention to whether and how its major Revolutions (i.e. Cognitive, Agricultural, Scientific, and Industrial) have benefited or hampered the flourishing of humankind. Learning opportunities included short essays, frequent Kahoots, small-group presentations, and group debates.

Global Studies

This course invites students to explore the social, financial, ecological, and political forces and trends that are shaping the twenty-first century world. Incorporating a range of humanities disciplines including geography, economics, psychology, sociology, ethics, and religious studies, students develop an intellectual toolkit for understanding contemporary issues and crafting informed perspectives. Students consider their obligations as citizens in an increasingly global society, as well as ways in which media, popular culture, and cognitive biases shape their understanding of people and events. Topics to be explored include (but are not limited to) human rights, theories of justice, crime and punishment, climate change, world poverty, migration, and globalization. Critical-thinking-oriented assignments invite research, analysis, and evaluation of various sources, as students formulate their own claims and construct arguments in their defense.

US History

This course begins not with the first page of a single textbook, but with an exploration of the U.S. history-textbook landscape itself. Students become attuned to the varieties of bias that even secondary and tertiary sources necessarily contain, questioning the extent to which authors either can or should attempt to be objective in communicating their accounts of the past. In surveying the events that shaped what would eventually become today’s United States, particular attention is given to contemporary treatment of historical heroes such as Columbus and Jefferson. Topics include the U.S. Constitution, major military conflicts, the emergence of political parties, westward expansion, immigration, the government’s treatment of Native Americans, slavery (and the attendant ideological divide that catalyzed the Civil War), Reconstruction, the United States’s imperialist endeavors, the Progressive Era, the Great Depression, the Civil Rights Movement, and the contentious presidential elections of recent decades. Throughout the year, we reflect on the extent to which the United States has been on a trajectory toward (to quote the Constitution) “a more perfect union.” Critical-thinking-oriented assignments invite research, analysis, and evaluation of various sources, as students formulate their own claims and construct arguments in their defense.

STEAM

Accelerated Algebra

In this combined Algebra I/II course students will cover the basic algebraic principles needed to move into more advanced mathematical studies. Topics covered include simplifying expressions using the appropriate order of operations, solving first and second degree equations in one variable, solving absolute value equations and inequalities, and examining the concept of functions. As the course progresses, more advanced topics such as polynomial, rational, exponential, and logarithmic functions will be examined. Throughout the course, an emphasis will be placed on solving real-world problems with both algebraic and graphical methods with the intention of building lasting connections. This course enables students to move on to Geometry and Pre-Calculus studies.

Geometry

Geometry class will explore plane and solid geometric figures while investigating topics such as congruence, similarity, length, perimeter and area. Constructions will enable students to travel between worded descriptions of problems, symbolic notation, and visual representations of ideas. In addition, concepts of algebra are interwoven, including the relationship between parallel and perpendicular lines, the study of coordinate geometry, equations of circles, and data analysis. By working through formal proofs, students will use logic in order to understand the progression from postulates and definitions to complex theorems.

Students will be assessed through nightly homework assignments, graded for completion. Daily homework discussions will allow students to share and explain their problem solutions in a collaborative discussion format. In addition, each week will conclude with a homework quiz, pulling questions directly from the week's homework assignments in order to assess students' completion and understanding of homework assignments. Lastly, each chapter or unit will conclude with a summative test combining topics. Units will also contain more physical, project-based assessments.
In addition to learning the proofs, formulas, and equations associated with geometry, students will approach the class in a discussion-based and collaborative way. This encourages students not just to memorize concepts and solutions, but to experience mathematics as a process that requires communication, collaboration, discussion, and perseverance.

Precalculus

This course is designed to give students more preparation for calculus by furthering their study of algebra and geometry. Students will expand their knowledge of linear and quadratic functions, polynomials, exponential and logarithmic functions, as well as radical and rational functions. Additional topics include an in-depth analysis of trigonometry, and an introduction to polar and

parametric equations, conic sections, and sequences and series. Time permitting, additional topics may include matrices, vectors, and a brief introduction to calculus concepts. Successful completion of this course enables students to move on to a calculus course.

Calculus

This course is equivalent to a first semester, introductory college calculus course, covering differential and integral calculus. Students will study limits of functions, continuity, derivatives and applications of the derivative. As part of integral calculus, students will examine the definite integral as a limit of Riemann sums, area under a curve, area between two curves, volume of solids, solutions to differential equations, and various real life applications related to economics, biological, and physical situations. Throughout the course, students will build their understanding of mathematical modeling in order to use functions and data to model real-world situations. Successful completion of this class enables students to move on to more advanced coursework in calculus.

Data Science

Did you know that 90% of the world's data was created in the last two years? Everyday we create 2.5 quintillion bytes of data so the information in the world is constantly evolving, growing and changing and data science is a fast developing field. In this course we will learn tools and methods to find, organize, visualize, and analyze some of this data. Students will use Google Sheets, CODAP, and R studio as well as learn statistical and algebraic approaches to work with current data to answer questions of interest on a variety of topics. This project based course will involve research, discussion, and presentations to interpret and communicate findings.

Biology

Biology is the study of life but what makes something alive? What characteristics are necessary for an organism to live? This course begins to examine the topics of life sciences while also laying the foundations for scientific inquiry and study. We begin at the cellular level by looking at life in its smallest parts and then expand out to investigate larger and more complex organisms, systems, behaviors and interactions. At each stage of this progression the class will discuss real world applications and topics of life sciences including nutrition, aerobic and anaerobic training, climate change, viruses and vaccines, genetic engineering, adaptive behavior, and more. The course challenges students to think creatively about the biological world and learn to think critically about the scientific process.

Anatomy and Physiology

Anatomy and Physiology at Burke Mountain Academy is designed around the unique, three-semester curriculum of the alpine race season. In person learning in the fall is conducive

to the many activities, experiments and investigations we will undertake looking at the dynamic actions of the integumentary, skeletal, musculary, and cardiovascular systems. The winter term starts with a connection of the respiratory system to the cardiovascular system, as well as a look at infectious diseases. The rest of the winter involves a detailed look at diet and the digestive system before starting into the anatomy of the nervous system and the structure of the brain. In the spring we continue to investigate the nervous system physiology, then look at modern research and technology as it applies to assisted living, as well as review the concepts of the endocrine and reproductive systems.

Chemistry

Chemistry at Burke Mountain Academy is designed around the unique, three-semester curriculum of the alpine race season. The fall curriculum works with weekly chemical interaction investigations that drive the discussions and logic around the basic types of atomic structure, electron configuration, electronegativity and reactivity as well as reaction types. The winter material shifts to deeper investigations of the mathematics of chemistry, as well as following a more linear path of learning. This is coupled with SAT and ACT questions in preparation for those tests. The content for the winter months revolves around the properties of gasses, the laws of thermodynamics and concepts of energy within molecules and reactions. During the spring semester the students will take a concentrated look at acids and bases, while developing their lab design and conduct skills.

Physics

Physics at Burke Mountain Academy is designed around the unique, three-semester curriculum of the alpine race season. The fall curriculum is investigation driven, with weekly activities, lab design and mechanical constructions that support and test physics concepts and theories of mass, energy, position and motion. The winter material shifts to deeper investigations of the mathematics of physics, as well as following a more linear path of learning. The many equations and mathematical theories of physics will be heavily derived, reviewed and manipulated. Further, each unit will have culminating projects tying the math to the physical world. For the winter months the content will investigate the field effects of electricity and magnetism. The spring semester involves multiple research article reviews as well as tying rotational and angular concepts to the linear systems studied.

Environmental Studies

The Environmental Studies course is designed to engage students in the scientific principles, concepts, and methodologies required to understand the interrelationships within the natural world and between the natural world and human society. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or

preventing them. Environmental science is interdisciplinary, embracing topics ranging from economics, sociology, and ethics to geology, biology, ecology, chemistry, and geography. In each unit, students will examine local, regional, national, and international environmental concerns through case studies, media, and personal experience. Students will also have lab work associated with each unit in which they will be required to collect, analyze, and interpret data and present this data in detailed reports. By the end of the course, students will have an understanding and possess the tools necessary to become engaged citizens, with the ability to actively discuss the environmental concerns facing them today at the community, national, and global levels.

Advanced Art Elective

In the Advanced Art class, students will experience a variety of mediums and projects, ranging from traditional drawing and painting to new media, such as photography and filmmaking. Class will take a conceptual approach, focusing on providing an open and welcoming space for students to explore unique and creative ideas for the sake of their own intellectual exploration. Students will be encouraged to draw inspiration from and make connections to other aspects of their lives, while developing new thought processes and ways of viewing the world. The course will follow a project based approach, using specific 1-4 week projects to learn and apply concepts. Each project will begin with learning basic techniques and concepts related to the medium. Next, students will brainstorm and plan ideas and create smaller or rough-draft versions. Finally, the unit will culminate in a large final project.

World Language

French 1

French is a beautiful language spoken by 300 million people across 5 continents, including North America. Did you know that East Burke is less than an hour from Quebec, where French is the official language spoken by over 7 million people? Learning French can change your life and create opportunities that you never knew existed. French 1 is an introduction to French. Students will learn the fundamentals of the language, and develop basic skills that you will build upon in French 2. In the fall trimester, students will be familiarized with the alphabet and the sounds of the language, before learning how to form simple sentences with the present tense. In the winter trimester, the focus will switch to learning how to modify verbs,and how to talk about the recent past and the near future. In the spring trimester, students will learn about articles and adjectives, as well as the vocabulary of skiing. Expect to read, write, and speak in French every day. Also expect to encounter film, literature, and music, and to learn about the many people who speak French around the world.

French 2

French 2 picks up where French 1 left off. Students will continue to learn the fundamentals of the language, and to develop basic language skills. In the fall trimester, the course will begin by learning how to ask questions and how to talk about the past. In the winter trimester, students will learn how to use negation and will learn travel vocabulary. In the spring trimester, students will learn the future tense while using vocabulary necessary for life as a student athlete. Expect to read, write, and speak in French every day. Also expect to encounter film, literature, and music, and to learn about the many people who speak French around the world.

Intermediate French

Intermediate French is an opportunity to take your language skills to the next level. In this course, students will watch a feature-length film, read a novel, participate in Harkness-style discussions, and write short essays. In the fall trimester, the class will compare and contrast topics as well as learn how to talk about the hypothetical. In the winter trimester, students will learn how to talk about time and how to use pronouns.. The spring trimester will finish the course with more focus on pronouns while also learning how to give orders. Expect to be challenged, to make mistakes, and to learn from them. By the end of the year, you will get a taste of what fluency in French looks like.

Advanced French

Advanced French is a multi year course designed to build fluency in the language. Students will learn advanced grammar and vocabulary through film and literature, reading novels as well as feature length French films. The fall trimester starts with a the graphic novel and learning how to use the subjunctive tense. The winter trimester builds on this content writing conditional sentences. The spring trimester finishes the course with guidance on prepositions and conjunctions. In this course, students should expect to participate in Harkness-style discussions, write essays, and complete a capstone project.