



Curriculum Guide Upper School 9th - 12th Grade

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About the Upper School Program

Telluride Mountain School is a non-profit independent school located in the San Juan Mountains of southwest Colorado. Students develop critical thinking, aesthetic expression, and ethical behavior through a challenging academic curriculum, supported by a vanguard experiential learning program and values-based education. Serving approximately 110 students, Telluride Mountain School offers a college preparatory program for grades three through twelve and a traditional Montessori program for preschool through grade two.

Curriculum

The curriculum for grades nine through twelve at Telluride Mountain School is a challenging, college-preparatory course emphasizing critical thinking, active citizenship, and refined communication skills with a continuation of the school's emphasis on active, engaged learning. The Upper School curriculum prepares students for competitive schools through rigorous mathematics, in-depth research skills, applied scientific inquiry, seminar-style classes in the humanities, Spanish language immersion, and continual emphasis on arts, athletics, and technology. Class sizes are small, and students benefit from individual attention and the right mix of challenge and support for maximum achievement.

Academic Learning

Specialist teachers who are passionate about their subjects instruct math, science, humanities, foreign language, and arts and bring academics to life. All courses are designed to offer challenge at the honors level for students who are capable of advanced coursework. Electives for juniors and seniors and signature programming, including the fall critical thinking retreat for freshmen and sophomores and community science projects, provide special opportunities for relevant and diversified learning. Assessments include the ERB, a test designed for high-performing independent schools, for grades nine and ten, and the PSAT, SAT, and ACT for upperclassmen. All students in the upper school also participate in the HSSE, the High School Survey of Student Engagement.

Arts and Foreign Language Education

Telluride Mountain School places an emphasis on developing not only core academic subjects but complementary studies that allow children to cultivate interests and talents, make connections among subjects, communicate in various ways, and develop a lifelong love of learning. Students in grades

nine through twelve participate in visual art, music, and Spanish along with a selection of electives. See graduation requirements for required courses.

Winter Sports Programs and Physical Education

Upper School students participate broadly in club and team sports within the Telluride community. At TMS, students participate in the four-month Winter Sports Program featuring instructional and supervised recreational downhill skiing and snowboarding, ski with the Telluride Ski and Snowboard Club (TSSC) for competitive programs. Student athletes with rigorous competition schedules may participate in the Ski Academy at Telluride Mountain School for students preparing for high-level events.

Ski Academy at Telluride Mountain School

A program for the nationally and internationally competitive skiers and snowboarders, SATMS provides customized academic programming and collaborates with the Telluride Ski and Snowboard Club for coaching in the winter sport disciplines.

Experiential Learning

Upper school students bring the school's mission to life as students demonstrate their commitment to community service, global citizenship, and engagement with the natural environment. Fall outdoor education trips feature week-long excursions to backpack, kayak, cave, climb, and explore the region's diverse ecosystems. Winter trips feature backcountry travel, avalanche education, and hut-to-hut ski trips. The spring's celebrated Experiential Learning Trips take students' learning out of the classroom to explore language, culture, history, science, and diverse environments around the world. Service learning projects enrich the trips and the students' understanding of the world, emphasizing their special responsibilities to serve.



About the Upper School Program

Immersion Studies

Upper school students complete in-depth studies of a topic of their choosing, culminating in a research paper, a visual display, and a presentation in front of the community. Studies usually relate to subjects drawn from their Experiential Learning Trips. Students learn vital skills of research, critical reading and analysis, argumentation, presentation, and public speaking. Seniors engage in a special Senior Project—a self-designed project that allows seniors to pursue a passion and share the results of their work with the community in the form of a permanent addition to the school’s collection- whether a bound set of poems, a finished artwork, or a recording of a film.

Values Education and Student Life

Upper School student life focuses on the development of engaged and responsible individuals within the community and the preparation of emerging skills for college and life beyond school. Students sign an Honor Code and Drug and Alcohol Free Pledge, engage in ongoing substance education with Freedom from Chemical Dependency, participate in education about healthy dating, gender issues, and sexuality, and benefit from the services of the school counselor. Juniors and seniors additionally participate in sessions for choosing colleges and preparing applications.

School Community

The Upper School and its students participate in the school community through many intentional community and cross-age activities. Twice weekly, students from grades one through twelve attend Morning Meeting, a Quaker-style gathering where every community member has a voice. Students in the Upper School have numerous opportunities to lead the community in the process of learning and develop increasingly sophisticated public speaking and presentation skills. Additionally, upperclassmen often have the opportunity of presenting their work to the larger Telluride Community.

Graduation Requirements

Upper school students complete a course of five core

academic classes per year in addition to arts, physical education, and electives. The academic year operates on a trimester system. Students must complete 24 credits in order to graduate though most students complete 28 or more credits over their four years in the Upper School. The following table summarizes required and recommended credits.

Honors Courses

Honors designation is available for most Upper School courses. Honors students participate in the regularly scheduled classes and activities for their course. Additionally, they meet weekly as an honors section to review independent work, receive additional instruction, and practice their skills. Students are expected to incorporate their advanced understanding into their participation in the non-honors class activities. They are assessed on their weekly independent honors-level work, their use of more advanced concepts during both honors and non-honors in-class discussions, and an honors specific section on major examinations. Students should expect to spend approximately 60 additional minutes a week on honors level assignments per course.

Course	Required Credits	Recommended Credits
English	4	4
History	3	4
Mathematics	3	4
Science	3	4
Language	3	4
Arts	2.25 (3 years)	3 (4 years)
Music	1 (2 years)	2 (4 years)
Physical Education	1.5 (3 years)	2 (4 years)
Immersion	2 (4 years)	2 (4 years)

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Upper School Curriculum Guide

Table of Contents

Humanities	2
Mathematics	5
Science	8
Spanish	11
Visual Art	12
Music	13
Immersion	13
Scope and Sequence	14



Upper School Curriculum Guide

Humanities:

Ancient World History and World Literature

This year's ninth and tenth grade humanities course focuses on the study of civilizations from the origins of humankind through the European Renaissance. Understanding significant historical moments and interpreting the art and literature of the corresponding time periods are key components of the course. The literature students read in class underscores the concepts of the complex nature of the development of civilization and the common themes of existence, which transcend time-periods and geography. From a historical standpoint, students examine the development of civilizations in order to understand both the diversity and the shared nature of the human experience. While emphasizing content, the course's ultimate goal is for students to feel confident critically analyzing texts and expressing detailed arguments in both oral and written contexts. Assessment is based on a variety of methods including creative writing, essay writing, group and individual projects, portfolios, and tests. Guiding questions for the course include: (a) What are the essential components of a civilization? (b) What constitutes a "successful" civilization from political, economic, social, and cultural viewpoints? (c) Why do some civilizations fail while others succeed? (b) How have various civilizations treated "outsiders"? (d) What is the epic hero's tale and why has this form of storytelling transcended time and culture? (e) What literary themes are similar across and time and culture; what literary styles are uniquely their own? (f) How does the study of ancient civilizations inform us of modern societies?

Writing: It is essential for students to feel confident expressing and defending their own thoughts through written prose. Students engage in a variety of writing processes including personal narrative, poetry, reader response, journaling, and critical essay. Emphasis is given to developing one's voice in personal and creative writing and effectively stating an argument then incorporating specific examples and quotes in analytical writing. As students develop their own writing style, they structure essays with a clear thesis, use of evidence to build an argument, and a concluding understanding. Students spend time in class revising their work as well as that of their peers. Formal

writing pieces range in length from one page to ten.

History:

The primary texts for this course are Prentice Hall's World History and Teacher Curriculum's Institute History Alive! World Connections. In addition to the main text, students read supplementary primary documents and excerpts from Jared Diamond's *Guns, Germs, and Steel* and Howard Zinn's *A People's History of the World*, as well as articles from National Geographic and Smithsonian Magazine. Students participate in project-based tasks both collaboratively and individually in order to connect seminal moments in history to their own life experiences and current issues around the globe. Class activities include discussion, group work, analyzing primary documents and exploring documentary film in order for students to shape, then reshape, their own understandings of an issue. Students should expect to read each night using active reading strategies such as underlining/highlighting, annotating, note taking, and/or outlining.

English: The first stories from the earliest civilizations began a long tradition of literature, which spans nearly every society and time period. This course emphasizes themes that transcend time and culture and identifies the ways that literature can help the reader to understand a society and him or herself. While much of the literature corresponds with the historical periods or themes examined in social studies, others are selected with the intention to help the student make personal connections to the protagonist; to make sense of his or her own experiences; and to ponder ethics and ethical decisions. Texts may include the following, along with additional poems and short stories: *Catcher In The Rye*, *Gilgamesh*, *Oedipus Rex* or *Medea*, *Siddhartha*, *Julius Caesar* or *Inherit the Wind*, *Cry the Beloved Country*, *Potiki* or *The Kite Runner*.

As students develop their skills in becoming critical readers they learn to analyze texts, and make connections across cultures, enabling them to tackle difficult material with confidence. Class work includes participating in seminar-style discussion, writing in-class reader responses and journal entries, creating visual projects to promote deeper understanding of the texts and their themes and engaging in



Upper School Curriculum Guide

formal and creative public speaking and acting. Students will also read works of their choice throughout the year and work on independent projects related to their respective choices.

The humanities program also includes a formal vocabulary and grammar component to help students develop their skills as readers, writers, and speakers. Vocabulary development in the high school focuses specifically on SAT preparation and Latin roots. Students develop skills to learn new vocabulary words, recognize them in context, and finally, use them in their own speaking and writing. Students also learn formal grammar to hone their writing, editing and speaking skills. Specifically students review: phrases (verbal, prepositional phrases), misplaced and dangling modifiers, clauses, subject/verb agreement, compliments, figures of speech, active/passive voice, use of comma and semicolon, types of sentences, and sentence combining. The primary texts used for vocabulary and grammar are *Vocabulary from Classical Roots* and *Editor in Chief: C1* respectively.

Modern World History: A Globalized World

Using the Ottoman conquest of Constantinople as a starting point, this course starts by examining the First Global Age and continues to explore the social, political, cultural, economic, and sometimes environmental, issues that have, and will, face a globalized world. Students will examine changes in the world order through four central eras, The First Global Age (1400 to 1800), The Age of Global Revolutions (1700s to 1914), Global Crisis and Achievement (1900-1945) and The Cold War and Beyond (1945-present). Essential Questions include: What changed the world most between 1400 and 1800? What forces drove the revolutions of the 1700s, 1800s and early 1900s? How did the global balance of power change between 1900 and 1945, and why? How did the Cold War change the world?

Foundational readings come from two different textbooks: The Teacher's Curriculum's History Alive: World Connections and Prentice Hall's World History. Additionally students examine primary documents, explore period art and architecture and deconstruct original political documents, cartoons, speeches and maps. Supplementary readings are pulled from the works of popular historians such as

Jared Diamond, Howard Zinn and Stephen Ambrose as well as from journals such as National Geographic, Time, The Economist and The Atlantic.

Upper school students are expected to keep an up-to-date, organized, resourceful, history journal that includes journal entries, notes, maps, in-class activities, and graphic organizers. Students are guided in writing multiple drafts of analytical and research papers; discerning biases in historical accounts; giving engaging class presentations; working collaboratively in groups; evaluating sources; engaging in debates, symposiums and presentations of historical characters; and preparing for and taking tests and exams.

Honors History:

Students who elect and are accepted into honors history will meet once a week outside of class and explore the issues, events, themes and ideas introduced in class further through weekly honors assignment that include more challenging readings from historians, journals, newspapers and advanced textbooks as well as analytical writing assignments and discussions.

English: This course examines world literature from its roots in Shakespeare's plays and sonnets to contemporary bodies of work. As a complement to the American canon we explore on alternating years, the focus is on British literature, primarily on classics such as William Shakespeare's *Hamlet*, Joseph Conrad's *Heart of Darkness*, and Samuel Beckett's *Waiting for Godot*. The class will also step beyond Britain's shores, examining the seminal works of authors such as Gabriel Garcia Marquez and Arundhati Roy. The primary goals of the reading in this course is to introduce students to a breadth of writing around the world, while also developing a solid literary foundation. Themes may include: the meaning of our existence, post-colonialism, the interplay of culture with identity, and the development and image of the hero. While some of the literature corresponds with the historical periods or themes examined in social studies, others are selected with the intention of helping the student to make personal connections to the protagonist; to make sense of



Upper School Curriculum Guide

their own micro world of high school; and to ponder ethics and ethical decisions.

As students develop their skills in becoming critical readers, they learn to analyze texts and to make connections across cultures, enabling them to tackle difficult material with confidence. Class work includes participating in seminar-style discussion, writing in-class reader responses and journal entries, creating visual projects to promote deeper understanding of the texts and their themes and engaging in formal and creative public speaking and acting. Students will also read works of their choice throughout the year and work on independent projects related to their respective choices. The humanities program also includes a formal vocabulary and grammar component to help students develop their skills as readers, writers, and speakers. Vocabulary development in the high school focuses specifically on SAT preparation and Latin roots. Students develop skills to learn new vocabulary words, recognize them in context, and finally, use them in their own speaking and writing. Students also learn formal grammar to hone their writing, editing and speaking skills. Specifically students review phrases (verbal, prepositional phrases), misplaced and dangling modifiers, clauses, subject/verb agreement, compliments, figures of speech, active/passive voice, use of comma and semicolon, types of sentences, and sentence combining.

The primary resources used for vocabulary and grammar are SAT prep books, online resources such as Word Voyage, and exercises culled from Warriner's Grammar and Bedford's Guide to Grammar. Critical Thinking Workshop: Each fall, Mountain School students participate in a multi-day, off-campus, critical-thinking workshop. Although we work on critical-thinking skills every day in class, we strongly believe that these are the most important skills students can develop during their time at the Mountain School. As such, we devote a few days every year to an interactive, critical-thinking workshop led by a cross section of teachers

9th Grade English Literature: The goal of literature studies in ninth grade English is twofold: 1. Expose students to a mixture of classic and modern literature that includes characters and conflicts that they can emotively connect

to and that encompass themes complementary to those in their geography studies, and 2. Focus on the essential skills that students will continue to build upon as they continue to take advanced literature classes throughout high school. To accomplish these goals, this course offers students novels that may include, but are not limited to, Potiki, Seedfolks, Inherit the Wind, The Giver, Animal Farm, Fahrenheit 451, Of Mice and Men, and Outcasts United. Students spend a significant portion of the school year practicing close reading of texts and improving writing and editing skills. Assessment is based on a variety of methods, including creative writing, essay writing, group and individual projects, and tests.

Writing: Although students engage in a variety of writing processes including personal narrative, poetry, reader response, journaling, and critical essay, there is a major emphasis on teaching students to craft a sophisticated thesis statement and effectively support it using textual evidence in an analytical essay. Students begin by supporting their insights with specific examples and quotes from the texts in reader responses. From there, they are coached in adding context and analysis to their responses. These responses then evolve into essay body paragraphs and inform the creation of a thesis statement. Students also have the opportunity to establish their own voices and tell stories important to them through creative and non-fiction writing projects. In the context of writing, students also review major grammar concepts and are guided in incorporating these concepts into their writing and editing processes, so they can confidently polish their own work. Students spend time in class revising their work as well as their peers'. Formal writing pieces range in length from one page to ten.

Vocabulary and Grammar: Studying vocabulary and grammar helps students develop their skills as readers, writers, and speakers. Vocabulary development in the Upper School focuses specifically on SAT preparation and Latin roots. Students develop skills to learn new vocabulary



Upper School Curriculum Guide

words, identify root families, recognize them in context, and finally, use them in their own writing through an online, self-paced, vocabulary program called Word Voyager hosted by Adelja Learning Inc. Grammar instruction includes teaching grammar in the context of writing, fusing it in with vocabulary practice, and formal instruction and review. Lessons focus on: phrases (verbal, prepositional), misplaced and dangling modifiers, clauses, subject/verb agreement, compliments, figures of speech, active/passive voice, use of comma and semicolon, types of sentences, and sentence combining. Grammar resources include practice on NoRedInk.com and using lessons from a combination of sources including Zaner-Bloser's Grammar Usage and Mechanics, William Strunk and E.B. White's The Element of Style, and assorted Internet resources.

World Geography and Cultures: The World Geography and Cultures course allows students to explore a variety of global case studies to gain understanding of the complex relationship between geography, humans, and the development of culture. The main text for this course is Teacher Curriculum Institute's Geography Alive! Regions and People and is supplemented by articles, podcasts and documentary films from Time, National Geographic, NPR and the The History Channel. Throughout their coursework, students will continue to develop essential critical thinking skills such as evaluating information; understanding and identifying causation; identifying main ideas and relevant supporting details; and analyzing maps and primary sources. Because of the nature of geography studies, emphasis will be placed on the analysis and synthesis of information from multiple types of sources such as tables, various map projections and thematic maps, articles and primary sources.

The course will explore the connections between a region's geography and culture, population, settlement patterns, economic activities, and natural resources. The course also examines how physical processes, such as climate, erosion, and earthquakes, influence specific regions and the human political and economic systems within them. Case studies

include current and pressing issues such as the current conflicts in the Middle East, effects of geography on disease control and prevention, land use in the Amazon, and the evolving role of women as micro entrepreneurs in developing countries.

Students will be challenged to look at different perspectives on complicated, controversial issues and then asked to establish, and support, their own views respective to these difficult issues. Each unit of study is framed by an essential question such as: How does urban sprawl affect people and the planet? How does migration affect the lives of people and the character of places? How do we connect to the greater world through our choices as consumers? What role does religion play in politics and current conflicts?

Assignments may include but are not limited to letter writing, critical thinking questions, interviews, surveys, tests and quizzes. Students will also be expected to participate in simulations, mock community and policy conferences, debates, symposiums and mapping laboratories.

American History and Literature: This humanities course focuses on American History from the birth of the new nation to the changing and enduring issues that Modern America faces today. Understanding significant historical moments—the Revolutionary War and the building of the Constitution, the Civil War, the Great Depression, World War I & II, the Vietnam War, and the Civil Rights' Era— as well as interpreting the art and literature of the corresponding time periods are key components of the course. The literature students read in class ties in with the larger themes of the course, such as American identity, the rights of the individual, and the American Dream. Guiding questions for the course include (a) What essential components define American culture? (b) What are the rights of the individual vs. the rights of the group? (c) How did the founding fathers shape our country in the past and present? (d) How does understanding American history help us to understand modern America and to make predictions about its future? (e) What is the American Dream and what forms does it take



Upper School Curriculum Guide

in American literature?

Writing: It is essential for students to feel confident expressing and defending their own thoughts through written prose. Students engage in a variety of writing processes including personal narrative, poetry, reader response, journaling, and the critical essay. Emphasis is given to developing one's voice in personal and creative writing and to effectively building and supporting an argument in analytical writing. Students learn how to plan their essays with an argument map, how to develop a thesis, and how to effectively transition from one idea to the next. Additionally, they spend time in class revising their work as well as their peers. Formal writing pieces range in length from one page to ten.

History: The primary texts for this course are Prentice Hall's United States History and Teacher Curriculum's Institute History Alive! Pursuing American Ideals. In addition to the main text, students read supplementary primary documents and excerpts from National Geographic and Smithsonian Magazine. Students participate in project-based tasks both collaboratively and individually in order to connect seminal moments in history to their own life experiences and current issues around the globe. Class activities include discussion, group work, analyzing primary documents and exploring documentary film in order for students to shape, then reshape, their own understandings of an issue. Students should expect to read each night using active reading strategies such as underlining/highlighting, annotating, note taking, and/or outlining. Assessment is based on a variety of methods including creative writing, essay writing, group and individual projects, portfolios and tests.

English: The primary goals of the reading in this course is to introduce students to a breadth of American authors and the central tenets of American Literature such as the meaning of freedom, the development and image of a hero, and ideals such as liberty, community, and authority. While some of the literature corresponds with the historical periods or themes examined in social studies, others are selected

with the intention of helping the student to make personal connections to the protagonist; to make sense of their own micro world of high school; and to ponder ethics and ethical decisions. Texts may include the following, along with additional poems, essays, and short stories: *A River Runs Through It*, *The Great Gatsby*, *Farewell To Arms*, *The Bluest Eye*, *A Raisin in the Sun*, and *The Things They Carried*.

As students develop their skills in becoming critical readers, they learn to analyze texts and to make connections across cultures, enabling them to tackle difficult material with confidence. Class work includes participating in seminar-style discussion, writing in-class reader responses and journal entries, creating visual projects to promote deeper understanding of the texts and their themes and engaging in formal and creative public speaking and acting. Students will also read works of their choice throughout the year and work on independent projects related to their respective choices.

The humanities program also includes a formal vocabulary and grammar component to help students develop their skills as readers, writers, and speakers. Vocabulary development in the high school focuses specifically on SAT preparation and Latin roots. Students develop skills to learn new vocabulary words, recognize them in context, and finally, use them in their own speaking and writing. Students also learn formal grammar to hone their writing, editing and speaking skills. Specifically students review phrases (verbal, prepositional phrases), misplaced and dangling modifiers, clauses, subject/verb agreement, compliments, figures of speech, active/passive voice, use of comma and semicolon, types of sentences, and sentence combining. The primary resources used for vocabulary and grammar are SAT prep books, online resources, and exercises culled from Warriner's Grammar and Bedford's Guide to Grammar.

Critical Thinking Workshop: Each fall, Mountain School students participate in a multi-day, off-campus, critical-thinking workshop. Although we work on critical-thinking skills every day in class, we strongly believe that these are the most important skills students can develop during their time at the Mountain School. As such, we devote a few days every year to an interactive, critical-thinking workshop led



Upper School Curriculum Guide

by a cross section of teachers to identify, name, hone and practice specific critical-thinking skills. Workshops might include an introduction to logic, evaluating Internet sources, building an argument, exploring perspective and evaluating data.

Mathematics

Geometry: The geometry course is designed to promote mastery in this new subject while reinforcing students' algebra skills. The primary text for the course is *Geometry, Seeing, Doing, Understanding 3rd ed.*, by Harold Jacobs. As the title suggests, students in this course learn by doing and come away from projects and assignments with a clear understanding of the "why" as well as the "how to" of geometry. The class continually uses algebra to solve geometric problems, thereby reviewing and strengthening algebra skills as they draw connections across the disciplines.

The course begins by examining deductive reasoning as the basis for geometric proof. Students learn classic constructions using a compass and straight edge and then add protractor and rulers to verify what they have deductively proved. Topics covered in the first half of the year include: direct and indirect proof; lines and angles; congruence; inequalities; parallel lines; and quadrilaterals. Additional topics explored in the second half of the year include: similarity, right triangle trigonometry, circles, regular polygons, geometric solids and non-Euclidean geometry.

While mastering the fundamentals of geometry, each student also further develops his/her own creative problem solving abilities. This objective is accomplished through a variety of challenging problems calling on varied techniques to reach solutions. Throughout, each student is encouraged to think and reason while drawing on all of his/her previous mathematics study.

Hands-on applied projects, such as building models and learning traditional measurement and surveying techniques, give students the opportunity to practice and develop skills such as estimation, technical drawing, statistical analysis

and use functions and equations. Students prepare for standardized tests such as the SAT and ACT by practicing test-taking strategies, working on computational speed in daily warm-ups and completing a spiral review of algebra skills and material from previous years. This course challenges students to see mathematics in an entirely new way, as computation gives way to examining the relationships between shape and space.

Algebra II: Algebra is the fundamental language of mathematics and the sciences; the Algebra II course builds on students' work in Algebra and Geometry to uncover the algebraic tools necessary to understand, describe, and explore the world. The primary text in this course is *Algebra 2*, published by Prentice Hall Mathematics. Work with the text, problem sets and homework assignments, enrichment activities and applied math projects reinforce concepts, strengthen mathematical skills and problem solving abilities and help students relate abstract concepts to tangible, realworld phenomena. The course begins with a look at statistics, measures of central tendency, and standard deviations, in which students work with other high school students in a cooperative unit. Students then progress into a review of numerical properties, algebraic expressions and inequalities before beginning an in-depth study of linear functions and linear systems. The skills reviewed and learned during this unit will serve as the foundation for work with higher-degree polynomials later in the course; students will learn to graph and solve linear systems and work with functions and function notation, skills crucial to the investigation of quadratics and more complicated functions. As the year progresses, students will explore radical functions, rational exponents, exponential and logarithmic functions, and trigonometry and trigonometric identities, creating a solid foundation for the study of higher mathematics for the rest of their academic careers.

Students prepare for standardized tests such as the SAT and ACT through discussions of test-taking strategy and daily warm-up problems. Problem solving skills and logical thinking are emphasized throughout the course, as students apply abstract concepts to real-world situations in problem



Upper School Curriculum Guide

sets and projects. Connections are drawn to the work students are doing in the sciences, giving students the opportunity to see the material applied to situations across curricula. Students emerge from the course with a critical-thinking, analytic mindset and the tools needed to excel in future mathematics studies.

Pre-Calculus: The pre-calculus course builds on the skills and concepts learned in Algebra II and earlier classes to prepare students for the elegant and complex study of motion and change, calculus. The primary resource for the course is *Pre-Calculus, 4th Edition*, by Robert Blitzer, published by Prentice Hall. Work with the text, problem sets and homework assignments, enrichment activities and applied math projects reinforce concepts, strengthen mathematical skills and problem solving abilities, and help students relate abstract concepts to tangible, real-world phenomena.

The course begins with a review of algebraic tools and expressions, re-examining number theory, absolute values, exponents and exponential notations, radicals, polynomials and factoring and complex numbers. A detailed study of linear and quadratic equations and relations follows, yielding to work with higher-degree polynomials, exponential and logarithmic functions, trigonometry, trigonometric identities, and systems of equations. In the conclusion of the course, students learn to evaluate limits and begin to investigate the derivative as a measure of non-linear rate of change. Students examine each concept through a variety of approaches; graphical, algebraic and numerical approaches give students a range of applicable tools and strategies appropriate to a multitude of problem types.

Students prepare for standardized tests such as the SAT and ACT through discussions of test-taking strategy and daily warm-up problems. Problem solving skills and logical thinking are emphasized throughout the course, as students apply abstract concepts to real-world situations in problem sets and projects. Connections are drawn to the work students are doing in the sciences, giving students the opportunity to see the material applied to situations across curricula. Students emerge from the course with a critical-

thinking, analytic mindset, ready to apply their mastery of functions to their work in calculus.

Calculus: Calculus, the study of non-linear change, is also the language in which nature expresses herself. A rigorous understanding of single-variable calculus gives students the tools to truly analyze continuous rates of change and areas under curves, where analyses based on simpler math lead only to approximations or work with idealized forms. Applications involve the physical sciences, engineering, economics, and life sciences. The course comprises an introduction to both differential and integral calculus in a single variable and serves as a stepping-stone to more advanced, college-level mathematics.

The course begins with an investigation of the local linearity of curves, paving the way to a fundamental understanding of the derivative. Students then review limits and continuity before re-examining the difference quotient. From there, students will approach the classic tangent line problem, introducing them to the concept of differentiation. Students will build a facility with basic differentiation rules, product and quotient rules, and the chain rule. Applications of differentiation will include higher-order derivatives, implicit differentiation, the location of extrema, the mean value theorem, the first and second derivative tests, and limits at infinity.

In the second half of the course, students will study anti-derivatives and definite and indefinite integration. Students will study the Fundamental Theorem of Calculus and will become proficient at integrating by substitution. An in-depth look at the differentiation and integration of exponential, logarithmic, and other transcendental functions follows. The course will conclude with an investigation of more advanced integration techniques and applications, including areas enclosed by curves, volumes of revolution, and integration by parts.

Students prepare for standardized tests such as the SAT and ACT through discussions of test-taking strategy and daily warm-up problems. Problem solving skills and logical thinking are emphasized throughout the course, as students



Upper School Curriculum Guide

apply abstract concepts to real-world situations in problem sets and projects. Connections are drawn to the work students are doing in the sciences, giving students the opportunity to see the material applied to situations across curricula. Students emerge from the course with a critical thinking, analytic mindset, and the tools needed to excel in future mathematics studies.

Second year students review important topics and skills covered in the first year curriculum, looking at concepts and applications through a new, more experienced lens. Students also investigate additional topics in mathematics, including Riemann sums, inverse- and hyperbolic-trigonometric functions, and infinite series. By the end of the second year course, or with significant independent work after the first year course, students will be prepared to sit the AP Calculus AB exam.

Topics in Applied Math: In the applied math course students apply previous concepts and skills to hands-on investigations of various mathematical topics that reinforce their learning in other classes. The course progresses in a series of discrete modular units with capstone projects for each unit; in each field, the application is examined in depth as students practice applying their previous learned skills to projects. Students hone previously learned skills as they gain an understanding of the ways in which mathematics is applied as a tool for explaining, predicting, and making decisions.

The course begins with a unit on some of the fundamentals of statistics, in which students learn sampling techniques, identify statistical sampling biases, and examine polling and sampling data. Students then design and conduct their own polls to determine parameters within a population of their choosing. A presidential election year affords the opportunity for students to compare their results with local, regional, and national figures. Students evaluate the statistical merits of their polls, identifying possible sources of bias and error within their design and results.

Subsequently, students investigate the fundamentals of microeconomics. Students identify and analyze supply and

demand curves, discuss profits and modes of operation, and identify opportunity costs and externalities. Case studies and applications help students develop more robust understandings of these concepts, while readings from sources such as *Freakonomics* by Steven Levitt and Stephen Dubner and *Naked Economics* by Charles Wheelan illuminate the ways by which economics influences human behavior and vice-versa.

Subsequent units will be selected by students and designed with their collaboration. These units may include applications in the physical sciences and engineering, further investigations into statistics and economics, and a more conceptual look at the fundamental principles of calculus. Throughout the course, students hone problem solving skills, critical analysis, and the construction of valid arguments through work on problem sets, projects, presentations, and papers.

Multivariable Calculus: The multivariable calculus course extends ideas from high school geometry and calculus to the mathematics of several variables. Topics covered may include vector geometry, parametric equations, partial derivatives, double integrals and line integrals, Green's theorem, triple integrals and surface integrals, the Divergence theorem, and Stokes' theorem. Students will approach the material through a variety of sources including online video lectures and college-level texts. Student work will include problem sets and take-home exams, covering calculations, applications, and proofs.

Science

Physics: The study of physics is the study of the simple and elegant natural laws of the world around us. Students learn the concepts and analytical methods in order to solve problems, answer questions, and also apply what they have learned in the examination of real-world phenomena. As students in this course have already completed an examination of conceptual physics, this course takes a more analytic approach; conceptual understanding is still fundamental, but a more mathematical analysis is applied to



Upper School Curriculum Guide

problems and predictions. Students practice using advanced algebra, trigonometry, and vector analysis, gaining valuable insight into the way mathematics describes nature. The curriculum follows Houghton Mifflin Harcourt's Physics, an interactive e-textbook targeted at the advanced high school and undergraduate level.

The year begins with the study of motion, as students become familiar with the concepts of displacement, velocity, and acceleration. Newton's Laws and momentum give students a better understanding of why things move as they do, and a look at mechanical and potential energy introduces them to the fundamental driving concept behind all of physics. The simple and predictable nature of motion thus observed is then briefly turned on its head in a study of the strange effects of special relativity.

Moving away from mechanics, the class investigates periodic motion and simple harmonic motion with pendulums and masses on springs, leading to an examination of waves and sound. Discussion of waves transitions naturally into a look at fluids and fluid mechanics followed by a unit on electricity and magnetism. Current, resistance, and capacitance are introduced in a study of circuits, followed by a look at magnetism and magnetic fields. These concepts are unified in an examination of electromagnetic waves, including light and optics. The introduction of the wave-particle duality of light leads into a glimpse into the world of quantum and atomic physics, ending the year with the fascinating subject of the incredibly bizarre workings of the sub-atomic world.

Throughout the class, students develop a new and deeper understanding of the world around them. Classroom lab experiments, the manipulation of concepts and equations in problem sets, and a look into the inner-workings of every-day objects enhance students' comprehension of the universe as a logical, predictable system in which they can apply their knowledge, inquiry, and with bit of creativity, explain the principles behind just about anything. Discussion of current events, scientific articles, and selected excerpts from relevant literature remind students that science does not occupy an isolated sphere but instead is intricately connected with issues of ethics, politics, economics, and even religion.

Biology: Science provides students with the tools to think about and investigate the world in which they live. Because of the personal relevance of biology to students' lives they quickly realize that science is not merely a collection of facts and theories.

The high school biology class is a combined laboratory, lecture, and field course that surveys the major topics in biology while demanding that students apply biologic theories to inform their local studies. Using the field studies, Miller and Levine's Biology textbook, and various print sources (*The New York Times*, *Discover*, *Scientific American*, *Nature*) as their primary resources, students explore the entire scope of a traditional biology course. By year's end, students have a deeper understanding and appreciation for life's complexities and diversity.

The flow of the course will be from the microscopic to macro, beginning with the roots of life and ending with a global perspective on the biosphere. Students begin their exploration of biology by investigations of the cell, the building block of life, with particular emphasis on its structures and functions. Students then study genetics, classification, and evolution, connecting patterns in the biological world as they are demonstrated throughout all kingdoms of life. Students will continue to develop their understanding of biological systems by studying human anatomy and physiology.

In the spring, laboratory techniques get refined with an in-depth survey of biologic interactions within the local environment. Students will study diversity with respect to living organisms in their local sub-alpine and montane forests, as well as internationally in the cloud and marine forests of Costa Rica. Students will study the complexities of ecosystems and their role in them, by engaging in topics such as: climax and succession, population growth, and energy flow.

Science concepts are also integrated into other curriculum areas on a regular basis. Reading, writing, mathematics, and technology are highlighted as an integral part of science. Students are expected to write thoughtful and accurate lab



Upper School Curriculum Guide

reports, maintain an up-to-date science journal, and regularly communicate laboratory findings to the class.

Experimentation and Lab Skills: In biology, as in all sciences, students spend a significant amount of time developing the skills required to successfully conduct and report laboratory experiments. Throughout this process, students have opportunities to design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings. As they develop their scientific skill set, students will be able to critique scientific investigations for quality by asking the following questions: Is your sample large enough? If the experiment were to be repeated, would the same results be obtained? Are there different ways to test a hypothesis? Are there other ways to explain your results? The above skills are essential to developing scientific inquiry.

Problem Solving Skills: This course teaches students to become curious and engaged scientific thinkers. It gives them the ability to assimilate a large body of information and apply that knowledge to predicting outcomes and solving problems. Students will learn how best to analyze a set of data, isolate pivotal findings, and transfer it to paralleling situations and phenomena.

Chemistry: Chemistry is the study of matter, of the ways in which the microscopic world, on the scale of the molecular and even the atomic, manifests itself in macroscopic phenomena. Chemistry pervades our lives, often in ways that we take for granted: it plays crucial roles in the products we buy, the food we eat, the air we breathe, and even the processes happening within our bodies. This class is designed to provide an enlightening, topical, and rigorous investigation of the ways in which chemistry influences the world around us in general and life in the Telluride area in particular.

As an introduction to the chemical world, the class briefly reviews fundamental aspects of the scientific method before investigating the nature of matter itself, examining the macroscopic qualities of substances and mixtures, elements and compounds. Ideas governing atomic structure

and the importance of the electron lead naturally to an analysis of the composition of the periodic table and the observable trends among elements. Thus armed with a comprehensive understanding of the building blocks of nature, the class looks at how these pieces combine and interact, through ionic and covalent bonding and then through general chemical reactions. Students learn to analyze change and yield through the important concept of stoichiometry before examining gases, aqueous systems, and solutions. A unit on thermochemistry leads students to understand the driving power behind all reactions: the flow of energy. Finally, students examine certain types of reactions in greater depth, including acid-base reactions and oxidation-reduction reactions. These subsets of reactions manifest themselves in countless ways around us every day: in the neutralization of acids within our stomachs, in mining reclamation and tailings, in rust forming on metals, and in the production of energy in a battery. The guiding text, *Chemistry*, by Wilbraham, Staley, Matta, and Waterman, is a clear, accessible text that does an excellent job of drawing connections between diverse topics and ideas.

Throughout the year, opportunities for fieldwork will allow the class to look at issues such as water quality, air pollution, and mining processes as informed, curious citizens. The community science module this year, energy, lends well to the study of chemistry. Students will visit selected energy sites throughout the state, and in doing so, they will gain a thorough understanding of the role of forms of matter in creating energy and fuels.

Throughout the year, the class focuses on the concepts and practice of scientific inquiry. Students learn to make observations and to answer questions using the scientific method. They spend a significant amount of time developing the skills required to successfully conduct and report laboratory experiments. The ability to accurately make measurements, collect data, and analyze that data allows students to understand fundamental relationships in chemistry and draw their own conclusions based on their findings. Lab experiments, real world connections to other courses, and investigations into everyday chemical



Upper School Curriculum Guide

phenomena enlighten and excite students. Throughout the year, students are challenged to reexamine the world around them through the lens of the principles of chemistry.

Environmental Science: Environmental science is at its very nature an interdisciplinary curriculum, combining the natural sciences with the social sciences and even humanities to better understand both the systems with which the natural world operates and the ways in which humans interact with the environment. As such, the course draws upon students' prior studies of physics, biology, and chemistry as foundations for their investigation of natural systems while introducing themes from the earth sciences as well as demography, economics, geography, and ethics.

The course begins with an introduction to the natural systems of the Earth, as students investigate processes by which energy and nutrients are transferred and cycled within ecosystems. Students examine the concept of biodiversity and the interactions between species before investigating global demographics and human population growth. From there, students will choose those topics best suited to the current issues affecting our community and environment and team up with local researchers, stakeholders, officials and other non-profits on topics such as the recent bark beetle outbreaks, water quality monitoring, mining in our region, air pollution and the effects of particulate matter on our annual snowpack. These local issues will naturally connect to larger global issues such as climate science and climate change, energy resources, water usage and pollution, air pollution, and sustainable growth.

Students will develop their understanding through a variety of sources: texts, including *Life on Earth* by E.O. Wilson, *Living in the Environment* by G. Tyler Miller and Scott Spoolman, case studies, fieldwork, and contemporary media. Additional readings from texts, such as *Silent Spring* by Rachel Carson, *Song for the Blue Ocean* by Carl Safina, and *Collapse* by Jared Diamond, will provide social and historical context. Articles from journals and journalism will contribute to an

understanding of current trends and events. Students will learn to critique arguments from both sides of environmental policy issues, separating fact from hyperbole, science from propaganda.

Anatomy: In this elective course, students explore the bodily structures and functions that support human life. In addition to exploring how the body normally operates, they examine how the body breaks down leading to injury, illness, and ultimately death. Through discussions, readings, video presentations, hands-on activities, and dissection of other mammals, students gain a deeper understanding of their own bodies. Primary references for the course include *Human Anatomy Coloring Book* by Joe Ziemian, *How We Die* by Sherwin Nuland, and *Anatomy for Beginners Video Series* by Gunther von Hagens. After an introduction to general anatomical nomenclature, students examine anatomy and physiology from a systems' perspective with a major focus on the muscular/skeletal system, the circulatory/respiratory system, the digestive system, and the reproductive system. With a more developed understanding of how the body works and fails, students discuss ethical dilemmas such as organ donation, euthanasia, and stem cell research. Throughout, students come to a greater understanding of the marvels of their own inner workings.

Spanish

Students in this level have developed a substantial vocabulary, investigated sentence structure, and practiced verb conjugation. They continue to build upon previously learned vocabulary and grammar. Students write page length compositions using targeted vocabulary and grammar and understand, tell, and retell longer stories. They continue to study and practice other grammatical concepts, including the subjunctive and commands and are able to express wishes or desires. Students read and discuss several novellas written in Spanish. Upon completion of the course students understand and appropriately use the two past tenses in Spanish, the preterit and imperfect, and accurately transition between past and present tenses. Additionally, students learn



Upper School Curriculum Guide

about and interact with Spanish speaking cultures through in and out of class activities.

The highlight of this year of study is a language immersion trip to a Spanish-speaking country. Students study Spanish and live with a host family, and by the end of the trip, students are confident in their language skills to actively engage and seek out conversations with native speakers.

Class instruction uses the communicative approach, which is based on the theory that the primary function of language is communication. In this approach, the student becomes an active learner; the teacher acts as a facilitator rather than a lecturer in order to place more responsibility on the student. To facilitate learning, class is conducted principally in the target language using vocabulary and syntax that is comprehensible to the student through the use of non-linguistic input, confirmation checks, and modified language (such as repetition and slower speech). Quick translations are provided on an as-needed basis.

The methodology of Teaching Proficiency through Reading and Storytelling (TPRS) is the basis for the text and curriculum used in this level. TPRS is a widely known and highly successful method for language acquisition and fluency development. Through stories, students learn targeted vocabulary and grammatical structures. The keys of TPRS are comprehension, interest, and repetition. In order to provide maximum oral repetitions of grammar and vocabulary, stories are “asked” rather than told to involve students in the creation of the story and use as many levels of questions as possible. Additionally, stories are constantly told and retold. Interest is maintained through personalization of the stories based on students’ lives and dramatization of the stories with student actors.

The vocabulary in each story is established through the use of Total Physical Response (TPR), or a kinesthetic action that responds to each vocabulary term. Other creative exercises maintain student interest, reinforce previously learned concepts, and lend insight into culture. Additional assignments and class activities may consist of timed writings, compositions, reading assignments, and games.

Honors Spanish: This supplemental course focuses on formalized grammar instruction. Using the Vista series text “Descubre”, students primarily work independently outside of class in order to enhance their knowledge of key grammatical concepts. Students receive individualized instruction once a week based on their level of understanding of the concepts covered in their independent work outside of class and their performance within class. They are expected to apply their understanding of grammatical concepts covered in their independent work to in-class activities and assignments in addition to meeting all regular requirements of their regularly scheduled Spanish class.

The curriculum provides a foundation in the American Council on the Teaching of Foreign Language’s (ACFTL) standards for foreign language learning:

- **Communication:** Communicate in Languages Other than English
- **Cultures:** Gain Knowledge and Understanding of Other Cultures
- **Connections:** Connect with Other Disciplines and Acquire Information
- **Comparisons:** Develop Insight into the Nature and Language and Culture
- **Communities:** Participate in Multilingual Communities at Home and Around the World



Upper School Curriculum Guide

Visual Art Foundations (9th Grade)

As technical skills are learned and practiced in the Foundations class, students are better able to effectively convey emotion through their personal artwork. Students are able to use their creative minds through artistic development and problem solving. This allows for a deeper and more meaningful communication through the visual arts. The Mountain School art program focuses on the artistic process rather than the quality of finished products. Students are encouraged to take risks, step outside their comfort zones, and experiment with a wide variety of visual and conceptual projects. Throughout the year, students engage in lessons designed to connect academic curricula and art history with traditional visual media. Discussions of cultural relevance and the impact of art in history facilitate usage of the art dialect, the formulation of personal criticism and appreciation of art on a global scale. Students build upon prior knowledge of the basic elements and principles of design and build confidence in the processes and skill sets of art production of various two and three-dimensional materials. Units are based around building a solid foundation of technical drawing skills. Through the study of line and value, students acquire the tools to accurately recreate the three-dimensional world before them onto a two-dimensional surface. Emphasis is placed on scale, proportion, ratio, and the value scale through the subject matter of simple geometric shapes; objects in comparison; interior and exterior architecture; organic matter; still life studies as well as human figure drawing; (self) portraiture; and landscape. A basic photography unit encourages the development of technical skills, as well as a deeper understanding of composition and creative perspective issues. Painting lessons allow students opportunities to learn color theory, mixing techniques, and compositional decision-making. Three-dimensional sculpture projects dealing with ceramic hand-building, wheel throwing, and plaster-based materials help students develop a sense of space and volume. Other media explored may include printmaking, large-format mural painting, fabric dyeing, and the commercial arts. Sketchbook assignments provide technical skill practice, idea generation, and preparation for class projects. Students will compile work in personal portfolios and participate in several peer and formal critique

processes. By the end of this course, students will have experience in several technical aspects of two and three-dimensional work, enabling realistic presentation and creative expression.

Advanced Visual Art (10th - 12th Grade)

Art is a process that requires the combination of learned skills and the ability to creatively express a given concept. As technical skills are practiced, students are better able to effectively convey genuine emotion through their personal artwork. Students are able to use their creative minds through artistic development and problem solving. This allows for a deeper and more meaningful communication through the visual arts. At the advanced level, the Mountain School art program continues to focus on the artistic process rather than the quality of finished products. This approach encourages students to continue to take risks, step outside their comfort zones, and experiment with a wide variety of visual and conceptual projects. Throughout the year, students engage in lessons designed to connect their academic curriculum and art history with traditional visual media. Discussions on cultural relevance and impact of art in history facilitate usage of the art dialect, the formulation of personal criticism and appreciation of art on a global scale. Students build upon prior knowledge of the basic elements and principles of design and build confidence in the processes and skill sets of art production of various two and three-dimensional materials. Units are built upon the technical drawing foundations acquired in the Art Foundations course. This rich drawing background serves as the foundation for explorations of multi-media art techniques. Students will participate in life drawing lessons as well as more creative, open-ended uses of the various drawing media. Through painting, students continue to develop their awareness of color theory, mixing techniques, and compositional decision-making, as well as technical application techniques. Other units may include printmaking, large-format painting, fabric arts, ceramic pottery and sculpture, photography, installation art, and commercial/graphic art. By the end of this course, students have knowledge of historical art concepts and connections and can confidently use two and three-



Upper School Curriculum Guide

dimensional technical skills in personal idea generation, realistic representation and creative expression.

Honors Visual Art (10th – 12th Grade)

This trimester-long course is offered as a supplement to the Advanced Visual Art course curriculum. While the standard curriculum provides a comprehensive study of media and techniques, the honors course will focus on particular areas of student interest. Using class lessons and projects as a springboard, honors students will extend media usage into deeper forms of technique and expression. This extended work will be accomplished outside of regular Advanced Art class time. Students will receive individualized instruction/critique/advising on a weekly basis based on their level of understanding of the concepts covered in their performance within class and their independent work outside of class. Permanent documentation of work and the building of a personal portfolio is a requirement.

Music

Taking advantage of the Rock and Roll Academy studio space, the students have the chance to play all the instruments and carve out their own creative space. A “learn by doing” approach encourages students to share their knowledge with each other, completing the essential loop of true understanding. We continue our cultural and historical approach to learning American music, coming to recognize major contributors and significant stylistic periods. We then bring this understanding, feel and technique for the music into performance and feel the power and creative joy of making and sharing this music. Students commonly perform various musical selections on a variety of instruments gaining invaluable musical experience as well as experiencing the teamwork required to succeed in a performance ensemble.

Immersion

The immersion course is comprised of an experiential education trip and culminating project that ties together students’ previous learning in field and literature based research, paper writing, and public presentation. Generally conducted during the third trimester, the course begins with an intensive study of background information on the region to prepare students for their spring experiential education trip. During this time, students identify a topic or theme that they would like to examine further that relates directly to their trip. Working closely with their advisor, students identify primary and secondary resources and formulate essential questions to guide their research. On the trip, which ranges in duration from one to two weeks, students refine their understanding of their individual topic and often have opportunities to visit relevant sites, interview experts, and conduct other primary research. Typically, trips also include a service component related to issues that students have studied. After returning, students complete their individual research and present their findings in the form of a thesis-driven research paper and a public presentation with supporting visuals. Throughout, students practice skills such as conducting research from multiple sources, note taking, organizing their writing, preparing a bibliography, citing information, producing visuals such as a poster or PowerPoint, and public speaking. In addition to their formal research paper and presentation, students also create an open-ended supporting visual project. In past years, trips have included: visiting Costa Rica or Peru, where they studied local ecosystems, attended a Spanish language school, and participated in home-stays; explored issues of immigration along the US/Mexico border from multiple perspectives while making documentary films; traveling to the Czech Republic, Austria, and Germany, where students reviewed European history and studied energy and sustainability practices on both sides of the former Iron Curtain.



Ninth through Twelfth Grade Scope and Sequence Mathematics

Mathematics

Ninth Grade	Tenth Grade	Eleventh and Twelfth Grade		
<p>Geometry Nature of deductive reasoning: conditional statements, indirect and direct proof; lines and angles; congruence and similarity; properties of equality and inequality; parallel and perpendicular lines; symmetry; right triangle trigonometry; Laws of sines and cosines circles; quadrilaterals; polygons; geometric solids; area and volume; concurrence; introduction to non-Euclidian geometries; constructions with compass and straightedge; writing formal and informal proofs; philosophy seminar/reading of Euclid's <i>Elements</i>; spiral algebra review; SAT preparation; problem-solving strategies</p>	<p>Algebra II Function notation; linear equations and inequalities; systems of linear equations and inequalities; exponential and logarithmic functions; rational and irrational functions; quadratic functions and complex numbers; higher degree functions; data analysis; standard deviation; SAT preparation; problem-solving strategies</p>	<p>Applied Math Cartography and surveying: right triangle trigonometry, law of sines and cosines, plan view and profiles, cross sections, contour maps, plane table mapping, conduct a simple land survey; Statistical analysis: probability, measures of central tendency, standard deviation, population sampling, graphical display of data, analyzing bias and perspective; computer applications; computer programming; standardized test prep; problem-solving strategies</p>	<p>Pre-Calculus/ Trigonometry Polynomial and rational functions; exponential and logarithmic functions; trigonometric functions, analytic trigonometry and additional topics in trigonometry; systems of equations and inequalities; conic sections and analytic geometry; sequences, induction, series and sequences; binomial series; introduction to calculus; SAT preparation; problem-solving strategies</p>	<p>Calculus Limits and limit laws; tangent and velocity problems; derivatives and the shapes of curves; derivatives of polynomials, rational functions, and exponential functions; rates of change in natural and social sciences; derivatives of trig functions; the chain rule; derivatives of logarithmic functions; higher order derivatives; implicit differentiation; calculating extrema on an interval; concavity; linear approximations and differentials; Newton's method; anti-derivatives; the definite integral; The Fundamental Theorem of Calculus; integration by parts; improper integrals; modeling with differential equations; L'Hopital's Rule; AP test preparation</p>



Ninth through Twelfth Grade Scope and Sequence

Science

Physics	Biology	Chemistry	Senior Elective Science
<p>Mechanics: linear, projectile and circular motion; Newton's laws; momentum and energy; gravitation; Einstein's Theory of Relativity; thermodynamics; properties of solids, liquids and gasses; electromagnetism; wave motion; sound and light; atomic and nuclear physics; integration of technology and lab work using laptops and probeware.</p>	<p>Cell structure and function; cell growth and division; genetics and heredity; evolution and; classification systems; dissection; human biology: anatomy, health and wellness; ecology and biodiversity. Including field studies in the local sub-alpine and montane forests, as well as the marine and cloud forests of Costa Rica.</p>	<p>MStructure and properties of matter including atomic structure and the periodic table of elements; chemical reactions and processes; bonding; states of matter and gas laws; stoichiometry; acids and bases; chemical names and formulas; scientific measurement; scientific problem solving skills including scientific method, dimensional analysis, integration of technology, and interpreting data and variables.</p> <p>Cross-curricular: connections and field based implementation of knowledge while exploring current and past concepts of energy and fuel.</p>	<p>Options <i>may</i> include:</p> <ul style="list-style-type: none"><i>Earth Science</i><i>Environmental Science</i><i>Anatomy and Physiology</i><i>Advanced Physics</i><i>Advanced Chemistry</i><i>Independent Research in Science</i>

**The Upper School science curriculum is taught as a mandatory three-year progression. Twelfth grade students have the option of taking an elective science or doing an individual research project.*



Ninth through Twelfth Grade Scope and Sequence

Social Studies/History

Ninth Grade	Tenth Grade	Eleventh Grade	Twelfth Grade
<p>Geography and World Cultures Focus on economics, politics, culture, geography, location, movement, religious influence and place; cause and effect; pro-con issues; note-taking; formal research paper; map work; group and individual presentations</p>	<p>Modern World History The development of human civilizations in the modern period with an emphasis on European nations through World War I and the Russian Revolution coupled with the study of European Literature. European Renaissance; Reformation and Religious wars; Europe and exploration of the New World; the scientific revolution; expansion and colonialism; nation building; the modern world; comparative historical/literary papers; collaborative multi-media group presentations; multi-sourced research projects</p>	<p>American History An in-depth examination of the foundations of American government and the major figures in its inception; major battles with focus on the American Revolution and the Civil War; focus on social movements, economics, politics and culture; geography, location, movement, religious influence, place; cause and effect; pro-con issues; note-taking; formal research paper; map work; group and individual presentations.</p>	<p>Rise of Globalization focus on economics, politics, culture, geography, location, movement, religious influence and place; cause and effect; pro-con issues; note-taking; formal and independent research paper; map work; group and individual presentations</p>



Ninth through Twelfth Grade Scope and Sequence

Language Arts/English

Ninth Grade	Tenth Grade	Eleventh Grade	Twelfth Grade
<p>Introduction to Literature Read texts by authors such as William Golding, Elie Wiesel, Zora Neal Hurston, John Steinbeck, Ray Bradbury, George Orwell, Lois Lowry, and Arthur Miller. Emphasis on close reading and development of analytical thinking skills and literary interpretation; refinement of grammar usage and development of critical vocabulary; analysis of the media; thesis-driven persuasive and analytical essays with peer reviews and revisions; response papers, critiques, and creative non-fiction; documented research paper; library and internet research; oral presentation of individual and team research projects and reports</p>	<p>Foundations of Literature Read <i>Gilgamesh</i>, Legends of King Arthur, and texts by Homer, Shakespeare, and British authors; analyze language and style in literature; comparative literature; vocabulary building; advanced grammar usage; short stories; poetry; analytic writing: stylistic awareness, development of voice and purpose, in-text citations and works cited; gathering and synthesizing information from multiple sources; using techniques of active reading; class note-taking; test-taking.</p>	<p>American Literature Read texts by Flannery O'Connor, Faulkner, Hemingway, Fitzgerald, Emerson, Thoreau, Hurston, Whitman, and Frost; analyze language and style in literature; comparative literature; vocabulary building with an emphasis on SAT prep; advanced grammar usage; analytic papers: peer reviews and writing provide opportunities for discussions about critical analysis and persuasive writing; gathering and synthesizing information from multiple sources</p>	<p>Contemporary World Literature Read texts by authors such as Tim O'Brien, Vladimir Nabokov, Don Delillo, Dave Eggers, Ayaan Hirsi Ali, Art Spiegelman, and Cormac McCarthy; analyze language and style in literature; comparative literature; vocabulary building with an emphasis on SAT prep; advanced grammar usage; analytic papers: peer reviews and writing provide opportunities for discussions about critical analysis and persuasive writing; gathering and synthesizing information from multiple sources</p>



Ninth through Twelfth Grade Scope and Sequence

Visual Art

Ninth/Tenth Grade	Eleventh/Twelfth Grade
<p>Creative problem solving is focus of project development; technical/mechanical drawing and painting skills solidified; extensive life drawing lessons; basic form and relationship; still life, landscape, figure drawing; expressive/abstract painting skill development; advanced ceramic techniques; student centered project critique and portfolio review; study cross-curricular connections between humanities, science and visual art; independent art history study and presentation; understanding and usage of various intrinsic media qualities; focus on process over product.</p>	<p>Technical/mechanical drawing and painting skill sets mastered and utilized in expressive, large-scale drawings/paintings; printmaking processes based in personal and commercial art; advanced color theory and acrylic/oil painting skill sets; advanced ceramic hand building/wheel throwing; sculpture as creative problem solving; mentorship opportunities; independent study of new media; study cross-curricular connections between humanities, science and visual art; art history research and presentation; extensive peer and professional critique process; portfolio development and review; exploration of art-based schools and careers.</p>

Music

Ninth/Tenth Grade	Eleventh/Twelfth Grade
<p>Incorporating all previous skills, Upper School students are encouraged to embark upon long-range projects, which utilize their skills. An understanding of the cultural and historical significance for the music is fostered. Performance becomes a vehicle for developing self-expression and self-esteem. Musical problem solving provides opportunity for additional growth and inquiry. Increased interface with music technology promotes technical awareness critical to modern music production. Focus upon individual technical skills is the result of understanding the broader goals of group.</p>	<p>Students listen to, play and write music that links them to contemporary society and helps them answer deeper “big picture” questions. Study of the cultural and historical significance of music is emphasized, as is performance to foster true engagement. Artistic process of Inspiration, Imitation, and Limitation leading to Realization. Impact is utilized on both personal and transpersonal levels. Students are encouraged to integrate and develop into artists with deep feeling and perspective. Performance as a vehicle of sharing, expression and giving is required.</p>



Ninth through Twelfth Grade Scope and Sequence

Spanish

Ninth/Tenth Grade

Listening comprehension, writing, reading and speaking skills development
Writing complete sentences, paragraphs, and page-length compositions
Comprehension of verbal and written stories; verbal and written productions of original stories
Comprehension and discussion of novella(s)
Exclusive communication in Spanish while in class
Frequently used Spanish vocabulary and phrases, such as work/schedules, health, and states of being
Introduction to (Grade 9) and continued study (Grade 10) of preterit and imperfect tenses, practice of transitioning between present and past tenses
Introduction to (Grade 9) and continued study (Grade 10) of informal negative commands and subjunctive usage
Ongoing practice of compound verb phrases indirect and direct objects, ser and estar, and other key grammatical elements
Analysis of cultural elements of Spanish-speaking countries

High School Honors Spanish:

Regular present tense verb conjugations, Irregular present tense verb conjugations, Stem-changing present tense verb conjugations, Present progressive, Indirect, direct, and double object pronouns, Verbs like gustar, Regular preterit tense verb conjugations, Irregular preterit verb conjugations, Stem-changing preterit verb conjugations, Imperfect verb conjugations, Usage of preterit imperfect verb tenses

Subjunctive verb conjugations

Eleventh/Twelfth Grade

Listening comprehension, writing, reading and speaking skills development
Writing complete sentences, paragraphs, and page-length compositions
Comprehension of verbal and written stories; verbal and written productions of original stories
Comprehension and discussion of novella(s)
Exclusive communication in Spanish while in class
Frequently used Spanish vocabulary and phrases, such as work/schedules, health, and states of being
Introduction to (Grade 9) and continued study (Grade 10) of preterit and imperfect tenses, practice of transitioning between present and past tenses
Introduction to (Grade 9) and continued study (Grade 10) of informal negative commands and subjunctive usage
Ongoing practice of compound verb phrases indirect and direct objects, ser and estar, and other key grammatical elements
Analysis of cultural elements of Spanish-speaking countries, such as cuisine and history



Ninth through Twelfth Grade Scope and Sequence

Experiential Education

Ninth-Twelfth Grade

Outdoor Education: Fall trips feature a week-long intensive outdoor experience in one of three major ecosystems of the area: the mountains, the desert, or the rivers and canyons. Students engage in a skills-based trip developing abilities for a range of outdoor pursuits, including backpacking, canyoneering, caving, biking, and climbing. Winter activities may include winter camping, backcountry travel, and snow safety training.

Service Learning: Experiential trips include service components, such as volunteering with national and international humanitarian and relief organizations and providing service in developing world settings.

Experiential Trips: Spring trips feature a two to three-week trip that often travels to international destinations. Issues include participation in Spanish language schools, cultural exchange “home stays”, global studies, resource use, ecosystems, historical and cultural exploration, and global citizenship and stewardship. The trips are designed as national and international in-depth service learning experiences, drawing on and incorporating research done before the trip in the classroom. Students complete their studies with accompanying presentations to the school community.



Ninth through Twelfth Grade Scope and Sequence

Winter Sports

Ninth/Tenth Grade Ski P.E.

Students are coached at their level at this phase. Basic skills and having a good time on snow is the focus for some participants while advancing technical skills across disciplines and terrain is the focus for other students. Program is offered two days a week. Competitive athletes are supported in their extensive training, travel, and competition schedules; Focus is placed on creating an environment in which all students will put forth their best effort and achieve their personal goals. Students are encouraged to broaden their terrain choices and improve all aspects of their skills. Mountain etiquette is modeled and practiced at all times.

Eleventh/Twelfth Grade Ski P.E.

Students are coached at their level at this phase. Basic skills and having a good time on snow is the focus for some participants while advancing technical skills across disciplines and terrain is the focus for other students. Program is offered two days a week. Competitive athletes are supported in their extensive training, travel, and competition schedules; Focus is placed on creating an environment in which all students will put forth their best effort and achieve their personal goals. Students are encouraged to broaden their terrain choices and improve all aspects of their skills. Mountain etiquette is modeled and practiced at all times. Special programming includes avalanche awareness and training.



Ninth through Twelfth Grade Scope and Sequence

Technology

Ninth/Tenth Grade

Demonstrate respect for and appropriate use of technology resources; select appropriate technology resources to solve a problem or complete a task; maintain personal laptop to use throughout all aspects of school; troubleshoot and solve technical problems as they arise; learn advanced computing skills to increase productivity; create presentations using a variety of media and technology resources; complete projects incorporating various disciplines which challenge students to independently seek out and gain knowledge of a new technology

Eleventh/Twelfth Grade

Demonstrate respect for and appropriate use of technology resources; select appropriate technology resources to solve a problem or complete a task; maintain personal laptop to use throughout all aspects of school; troubleshoot and solve technical problems as they arise learn advanced computing skills to increase productivity; complete projects incorporating various disciplines which challenge students to independently seek out and gain knowledge of a new technology; develop advanced research skills in preparation for higher education; publish and/or distribute original works using a variety of appropriate technologies; examine emerging technologies in the context of their roles in and impacts on society

MISSION

Telluride Mountain School delivers a program of challenging academics that promotes critical thinking, aesthetic expression and ethical behavior, while encompassing a commitment to community service, global citizenship and engagement with the natural environment. The school culture embraces independence, personal responsibility, compassion, curiosity and joy.

CORE VALUES

RESPECT

We honor self and community, and value that which is different.

LOVE OF LEARNING

We foster lasting curiosity, creativity and passion in a challenging and safe environment.

RESPONSIBILITY

We understand the impact of personal actions, and uphold service as an integral part of scholarship and citizenship.

INTEGRITY

We adhere to values and ethics that enable us to approach our studies and lives with courage, pride, honesty and empathy.



www.telluridemtnschool.org

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