



Mountain Lakes, New Jersey

**Course of Studies
2023 - 2024**



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DESCRIPTION OF COURSES

ENGLISH

LANGUAGE ARTS (READING) - Grade Six

The primary function of the sixth grade reading program is to provide a classroom climate of learning opportunities that will enable students to become more competent, confident and joyful learners. Literary materials such as novels, biographies, interviews, short stories, poems, magazines, newspapers, and each other's writing are provided. Comparisons, predictions, connections, and critical and creative thinking become familiar to students through literary analysis.

Students ask questions, discuss with each other in both small and large groups, value their responses, respect others interpretations, explore values, prepare and share written responses, and in the process, become critical readers and thinkers.

LANGUAGE ARTS (WRITING) - Grade Six

The sixth grade English Program is designed to promote student competence in the areas of writing, including grammar, syntax, spelling, mechanics, as well as style and writing as an art form; speaking and listening, including formal speeches and individual and group presentations; and research, including projects and inquiry based reports. Students are engaged in many projects throughout the year that promote skills in planning, organizing, researching, analyzing and evaluating. The approach for delivering instruction is based on the philosophy that education is most effective when students are engaged in meaningful activities in which they can develop skills in English while enjoying themselves. The daily activities and projects give the child the experience and skills for a sound educational foundation in the Language Arts.

LANGUAGE ARTS - Grade Seven

The seventh grade Language Arts course utilizes the research-proven structures of best practice teaching. These include but are not limited to small group activities, reading as thinking, representing to learn, classroom workshops, authentic experiences, and reflective assessment all integrated into thematic units. Through the use of whole books, primary sources, and digital materials, students use hands-on learning to develop higher order thinking skills through a deep study of a smaller number of topics. By teaching the students to connect new concepts with existing understanding, the students respond actively to explore and acquire new information so as to best shape it into meaningful knowledge.

LANGUAGE ARTS - Grade Eight

The eighth grade Language Arts program is designed to help students further develop and strengthen skills in several areas including: reading literature and informational texts, writing for various purposes and audiences, speaking and listening and language skills. The course is designed around thematic units that contain varied genres and assignments to engage the students in the learning process. Through class work, short-term assignments and long-term projects, students are actively involved in their education and are self-directed learners. To ensure that students are exposed to a wide variety of texts, students explore novels, short stories, poetry and dramas, as well as informational texts such as news articles, journals and essays. These works cover issues that transcend time and place and connect directly to the lives of the students.

Writing stems from the ideas in these works. Students write routinely over short and extended time frames for varied purposes – to persuade, inform and narrate. Mastery of specific skills is associated with each type of writing. Peer-editing, one-on-one teacher conferences, self-reflection and portfolio building are all parts of the writing process. A final writing assessment occurs through a research project that culminates in an MLA style research paper.

The use of technology is employed to produce writing that demonstrates a command of grade-appropriate language skills. Language skills are strengthened through extensive vocabulary assignments, also stemming from the texts. In addition to defining the vocabulary words, students show mastery of definitions by using these

words in their own writing assignments. A student-centered approach discussion of the literature allows students to be active participants in the learning process. Students work creatively and collaboratively with their peers to engage in small group and whole class discussions, research projects and group presentations. With a strong emphasis on reading, writing, speaking and listening, and language skills throughout the year, students are well prepared to enter high school.

MATHEMATICS

MATHEMATICS - Grade Six

The New Jersey Student Learning standards for grade 6 strengthen students' ability to solve real-world problems by writing and solving equations. Teachers differentiate the level of rigor in this course according to individual needs. Topics include ratios, absolute value, positive and negative numbers, finding common factors and representing points in the plane with negative number coordinates. Students learn to find the area of triangles, quadrilaterals, and polygons by decomposing into rectangles, triangles and other shapes. Students utilize nets to find the surface area of three-dimensional figures. Students learn to recognize statistical questions, describe distributions, create graphical displays, and identify measures of center and variability.

MATHEMATICS - Grade Seven

Math 7/Math 7 Accelerated

Math 7 contains a great deal of focus on the expressions and equations, geometry, and statistics and probability strands of the New Jersey Student Learning Standards. Instructional methods include whole class instruction, individualized instruction, and cooperative group learning. Hands-on manipulatives and graphing calculators are used throughout the course. Students extend their learning of expressions, equations, inequalities, and geometric concepts to solve problems, graph solution sets, and interpret solutions in the context of problems. This course also addresses geometric concepts of area, surface area, and volume. Learners will solve problems involving areas of two-dimensional objects composed of triangles, quadrilaterals, and polygons, and use facts about supplementary, complementary, vertical, and adjacent angles. Students will represent sample spaces, develop models used to find probabilities, and find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. Students will also learn that statistics can be used to gain information about a population and the importance of random sampling in producing valid inferences. Math 7 Accelerated mirrors the Math 7 curriculum, but moves at a faster pace and challenges students with a greater level of rigor in their work.

Math 7 Accelerated

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Geometry

A small cohort of students who demonstrate extremely high ability in Mathematics will be provided the option of skipping Math 7 and accelerating into Geometry. This Geometry course covers the basic concepts of plane, solid, coordinate, and some analytic geometry stressing deductive proof and reasoning. Algebraic concepts are introduced and extended into the course throughout the year. Moving towards formal mathematical arguments, the standards presented in this high school geometry course are meant to formalize and extend middle grades' geometric experiences. Transformations are presented to assist with the building of conceptual understandings of the geometric concepts. The aims and objectives of the course are to develop and show the value of the logic of deductive reasoning and to improve and increase the understanding and application of the terminology, symbolism, and structure of mathematics. It is designed to develop the student's ability to think creatively and critically in both mathematical and non-mathematical situations. The student will be shown how the analysis of data collected through the observation and measurement of geometric figures can lead to a formal statement of a geometric relationship. This course will deepen a student's

understanding of two- and three-dimensional figures and their properties and allow them to use these ideas in real-world situations.

MATHEMATICS - Grade Eight

Math 8

This course curriculum adheres to the New Jersey Student Learning Standards for Grade 8 Mathematics and provides students with an additional year of foundation, prior to entering high school mathematics. The course will cover concepts found under the headings of the number system, expressions and equations, functions, geometry, and statistics. While reviewing rational numbers, students will learn that not all numbers are rational. Students will work with radicals and exponents, apply the properties of integer exponents, use the power of 10 and work with scientific notation. Students will understand proportional relationships, find the slope of lines, continue their work in solving linear equations and extend this knowledge to solving systems of linear equations. Students are also introduced to the idea of a function and will learn to graph, compare and write linear functions. They will continue their understanding of right triangles by applying the Pythagorean Theorem, its converse, finding the distance between two points, will review parallel lines, and investigate angle relationships.. Students will solve real-world problems involving the volume of cylinders, cones and spheres, will perform reflections, rotations, translations and dilations of two-dimensional figures, and deepen their understanding of congruence and similarity. Students will investigate patterns of association in bivariate data using scatter plots and two-way tables, informally fitting a line and using the equation to solve problems for scatter plots that suggest a linear association. Instructional methods include whole class instruction, individualized instruction, and cooperative learning. Hands-on manipulatives, as well as scientific and graphing calculators are used within this course.

Geometry (*Sequence Updated)

Students who completed Math 7 Accelerated in Grade 7 will be invited to enroll in Geometry in Grade 8. This Geometry course covers the basic concepts of plane, solid, coordinate, and some analytic geometry stressing deductive proof and reasoning. Algebraic concepts are introduced and extended into the course throughout the year. Moving towards formal mathematical arguments, the standards presented in this high school geometry course are meant to formalize and extend middle grades' geometric experiences. Transformations are presented to assist with the building of conceptual understandings of the

geometric concepts. The aims and objectives of the course are to develop and show the value of the logic of deductive reasoning and to improve and increase the understanding and application of the terminology, symbolism, and structure of mathematics. It is designed to develop the student's ability to think creatively and critically in both mathematical and non-mathematical situations. The student will be shown how the analysis of data collected through the observation and measurement of geometric figures can lead to a formal statement of a geometric relationship. This course will deepen a student's understanding of two- and three-dimensional figures and their properties and allow them to use these ideas in real-world situations.

Algebra 1 (*Sequence Updated)

The cohort of students who completed Geometry in Grade 7 will be invited to enroll in Algebra 1 in Grade 8. Algebra 1 builds upon the skills learned in the expressions and equations strand of the New Jersey Student Learning Standards for grades 6, 7, and 8. In this course, students will model relationships using equations and inequalities in one and two variables. Models explored will include linear, exponential, and quadratic relationships with an emphasis on domain, range, and function notation. Students will sketch graphs and use key features to interpret and justify solutions. Students will extend their ability to graph functions using transformations. Students will reveal properties of quadratic equations through the process of factoring and completing the square. Students will solve quadratic equations using square roots, the quadratic formula, factoring, and completing the square. This course will also include a unit on data analysis involving the analysis of two-way frequency tables, representing and comparing data using dot plots, histograms, and box plots, fitting models to bi-variate data and analyzing residuals and correlation coefficients to determine appropriateness of fit. Instructional methods include whole class instruction, individualized instruction, and cooperative group learning. Hands-on manipulatives and graphing calculators are used throughout the course.

SOCIAL STUDIES

SOCIAL STUDIES - Grade Six

The sixth grade Social Studies curriculum continues the focus of American history that began at Wildwood. Students will continue their exploration of U. S. history from the Constitutional Convention to Reconstruction (1787- 1877). During the second half of the year, the students will focus on civics education to ensure students see themselves as active citizens. The chronology of events, which occurred in the United States, is examined through a thematic approach. The concepts of society, politics, economy, industry and technology, as well as American ideals, will be traced throughout these time periods. Students will come to recognize these themes, their interplay and their impact on life in America. In the 6th grade Social Studies Curriculum students will develop skills in research and organization, geography, and historical analysis.

SOCIAL STUDIES - Grade Seven

Students explore the history of mankind from its earliest beginnings through the ancient civilizations that had a great impact upon the Western World. Special emphasis is placed on examining how the ancient civilizations of Mesopotamia, Egypt, Israel, Greece and Rome have impacted our culture and lives today. Historical content is combined with the practice of important Social Studies skills such as map reading, timeline construction, historical research, non-fiction reading and note-taking, persuasive writing and public speaking. This is the first of a two-part sequence continued in the eighth grade.

SOCIAL STUDIES - Grade Eight

The eighth grade Social Studies program constitutes the culmination of the three-year sequence of study for the middle school. Students will learn about how the world changed after the collapse of the Roman Empire exploring civilizations and cultures from around the globe between the 5th and 18th centuries CE. They will be

introduced to the development of countries, governments, language, and culture while delving deeper into how the changes they wrought continue to affect our modern world. In addition, students will learn about how the Age of Exploration and colonization continues to impact our present. While covering these groups and their interactions with one another we will consider multiple perspectives, value diversity and promote cultural understanding.

SCIENCE

SCIENCE - Grade Six

The sixth grade introductory Earth Science program focuses on five basic units of study: The Metric System, Earth in Space, Meteorology, Oceanography, and Geology. Students are engaged in labs, and problem solving activities (both indoor and out), including STEM projects.

The major goal of science in grade six is to nurture in the student an appreciation and enthusiasm for science. It shows students how earth science is incorporated into their everyday life and how ethical decision-making relates to the health of the planet.

SCIENCE - Grade Seven

The Life Science curriculum in grade seven introduces students to basic biological concepts using a “hand-on” approach. The year begins with an introduction to the scientific method, the development of controlled experiments, and metric measurement. Once these are mastered, the students discover what it really means to be “alive” by identifying the characteristics and needs of living things.

A unit on the use of the microscope allows the students’ understanding of life to move to the cellular level by studying the function of the organelles and the many processes cells must perform to keep an organism functioning. These include diffusion, osmosis, photosynthesis, cellular respirations, DNA replication, protein synthesis, mitosis, and meiosis. Basic genetics, heredity, mutations, natural selection, survival of the fittest, and evolution are taught to explain the development of and diversity among the species. The remainder of the year is spent exploring how organisms are classified and named and the characteristics that place them into particular taxonomic groups.

PHYSICAL SCIENCE - Grade Eight

Eighth grade Physical Science is an introductory course in chemistry, physics, and energy designed to provide students with a basis for

further study in the high school science courses, as well as having practical applications to the student's everyday life. Included are student activities, laboratory experiments, demonstrations, and many opportunities for written and oral expression, application of math skills, note-taking, test-taking, and media-based research.

WORLD LANGUAGES

INTRODUCTION TO LANGUAGE & CULTURE: FRENCH OR SPANISH - Grade Six

This course is designed for all students in the 6th grade as a survey in the World Languages discipline, specifically French or Spanish. The class is structured as a thirty-five day classroom experience whose goal is to expose students to the various cultural and linguistic topics that they will explore in further detail as they move forward into full-year World Language study in the 7th and 8th grades. In addition, the course will include activities that foster the goals of the district's former and current Long Range Education Plans, including our 21st Century Skills initiative.

Students entering 6th grade will have had world language instruction at Wildwood Elementary School. Wildwood's program provides their students with a full year of study in each language, allowing them to compare and make an informed decision at the end of 5th grade. Briarcliff's 6th grade World Language Course will allow students to build on their previous knowledge and empower them to make a decision in the choice of world language study going into the 7th and 8th grades.

SPANISH I - Grade Seven

Spanish Ia (grade 7) is presented as the first part of a two-year alternative curriculum to the comparable one-year curriculum offered at the high school level. Although the topics of both curricula vary little, the Spanish Ia (grade 7) course employs a style of presentation geared to the middle school student. There is more emphasis on oral communication, and less on written communication. There is also less emphasis on grammar. The course is organized in manageable increments using an on-line textbook and aims to develop linguistic proficiency, cultural awareness and study/time management skills. Achievable functional objectives are attained using a variety of instructional techniques, activities and technology. Basic study skills such as note taking, organization and time management will be covered. Evaluation of students' performance will include various

assessment strategies such as quizzes, group projects and graded assignments.

FRENCH Ia - Grade Seven

French Ia (grade 7) is presented as the first part of a two-year alternative curriculum to the comparable one-year curriculum offered at the high school level. Although the topics of both curricula vary little, the French Ia (grade 7) course employs a style of presentation geared to the middle school student. There is more emphasis on oral communication, and less on written communication. There is also less emphasis on grammar. The course is organized in manageable increments using an on-line textbook and aims to develop linguistic proficiency, cultural awareness and study/time management skills. Achievable functional objectives are attained using a variety of instructional techniques, activities and technology. Basic study skills such as note taking, organization and time management will be covered. Evaluation of students' performance will include various assessment strategies such as quizzes, group projects and graded assignments.

SPANISH Ib - Grade Eight

Spanish Ib (grade 8) is presented as the second part of the two-year alternative curriculum to the comparable one-year curriculum offered at the high school level. Although the topics of both curricula vary little, the Spanish Ib (grade 8) course employs a style of presentation geared to the middle school student. There is more emphasis on oral communication, and less on written communication. There is also less emphasis on grammar. This course is organized in manageable increments with an aim to develop linguistic proficiency, cultural awareness and study skills. Achievable functional objectives are attained using a variety of instructional techniques, activities and technology. Basic study skills such as note taking, organization and test taking will be covered. Evaluation of students' performance will include various types of assessment strategies such as tests, quizzes, class participation, and homework and group projects.

FRENCH 1b - Grade Eight

French 1b (grade 8) is presented as the second part of the two-year alternative curriculum to the comparable one-year curriculum offered at the high school level. Although the topics of both curricula vary little, the French 1b (grade 8) course employs a style of presentation geared to the middle school student. There is more emphasis on oral communication, and less on written communication. There is also less emphasis on grammar. This course is organized in manageable increments with an aim to develop linguistic proficiency, cultural awareness and study skills. Achievable functional objectives are attained using a variety of instructional techniques, activities and technology. Basic study skills such as note taking, organization and test taking will be covered. Evaluation of students' performance will include various types of assessment strategies such as tests, quizzes, class participation, and homework and group projects.

STRATEGIES INTERVENTION

STRATEGIES INTERVENTION - Grades Six, Seven, & Eight

The Strategies Intervention Program is an intervention system for students in need of academic and/or study skill support and reinforcement. Students can be eligible due to analysis of standardized test scores, general classroom observations, teacher and parent recommendations, or as a formal intervention for skill development. Students who are eligible can be instructed anywhere from one to five periods a week during Physical Education, Allied classes, PEP periods, and/or Reinforcement time. Students will have appropriate intervention from the area of weakness and/or remediation of a grade-level skill as per the content of the curriculum. Collaboration with the content area teachers provides students with optimal skill development and/or strategies to aid in student success.

SPECIAL EDUCATION

SPECIAL EDUCATION - Grades Six, Seven, Eight

Teachers in the Special Education Department work to meet the needs of each individual student, by following the guidelines set forth in each Individualized Education Program (IEP). Special Education teachers teach their own Replacement classes in various subject areas as well as provide In-Class support. Most Special Education students are scheduled for Supplemental periods throughout the week where they are taught important skills necessary to help them manage the demands of their curriculum.

PHYSICAL EDUCATION

PHYSICAL EDUCATION & LEADERSHIP DEVELOPMENT

Middle school students at Briarcliff will be exposed to personal training and various individual and team sports and activities.

Personal Training:

All students will be pre and post tested yearly. Beginning in sixth grade students will be introduced to foundational exercises, methods and techniques for developing their personal training repertoire. Seventh and eighth grade students will continue to build upon these areas toward individual mastery.

Sport and Cooperative Games:

All grade levels will focus on life lessons learned as the main component of fair play, while developing personal skills, game strategies, and leadership through various team and individual sports and activities.

ALLIED

ART - Grades Six, Seven, Eight

Art is constantly growing and changing. Here in Briarcliff Middle School's Visual Art Program the students are challenged and given the opportunity to see what the world of art has to offer with a comprehensive, progressive program that builds on skills year after year.

In **6th Grade Art**, students are exposed to various drawing techniques to create a foundation for illustrating a range of subject matter. This foundation in drawing builds into developing painting and sculpting techniques (two-dimensional and three-dimensional art).

7th Grade Art provides students a knowledge of various techniques of urban typography from around the globe. Students will experience art as it is viewed and created through the influence of cultures in different parts of the world.

8th Grade Art helps students see the possibilities of art as a graphic design career. By combining the knowledge gained through 6th grade art foundations and their experience with typography techniques learned in 7th grade, students consider and use graphic design elements such as logo design, package design, advertising, and illustration.

Grades 6 through 8 provide comprehensive instruction and application of the elements and principles of art. Students will be able to create various works that are seen in different artistic cultures. Throughout their experience, art history is infused so that students can grasp the meanings and cultures underlying each piece they create.

LAKE DRIVE 8th PERIOD ART

In this full year course, students work on projects focusing on the elements of art and principles of design through various art mediums.

Students experience comprehensive instruction and application of the elements and principles of art. Students will be able to create various works that are seen in different artistic cultures. Throughout their experience, art history is infused so that students can grasp the meanings and cultures underlying each piece they create.

COMMUNICATIONS - Grade Seven

In today's world of excessive text messaging and electronic mail correspondence, interpersonal verbal communication skills continue to be a necessary need of instruction in our school. The 7th Communications Allied class will be taught the elements of communication and furthermore, learn how these elements satisfy one's social and professional needs and overall decision-making. The students will be able to identify the six ingredients to becoming an effective communicator, which will be assessed in a variety of speeches. These speeches include: Persuasive, Impromptu, and a demonstration speech.

COMPUTERS - Grades Six, Seven, Eight

The Allied Computers 8 week cycle course consists of units of study which emerge from the current 2020 NJSL Computer Science and Design Thinking standards, as well as the Career Readiness, Life Literacies, and Key Skills' Personal Financial Literacy standards. Using the technology tools of the Google Workspace for Education, code.org and Everfi, students study and work through units in coding, financial literacy, design thinking and digital citizenship while integrating math, science, language arts and creative arts. Students work in both small groups and independently, and have opportunities to forge ahead and/or receive extra support so that each student's potential and needs are met.

HEALTH - Grade Six

This is the beginning health class for Briarcliff students. The six-grade health class focuses on eleven different body systems; students learn the purpose and function of each system. With this health knowledge,

the students learn to respect and care for their bodies. They understand healthy eating habits and daily exercise can lead to whole body wellness.

HEALTH - Grade Seven

This course is the second part of a two-year program to give each student a greater understanding of the concept of optimum health and wellness. Seventh graders will start by reviewing the three components of health (mental, physical and emotional). Content includes resolving conflict, understanding positive and negative aspects of behavior and knowing what stress is and how it can be resolved. Students are introduced to mindfulness promoting activity, including yoga & mediation. Decision making, mental fitness, communication skills, and relationships will also be thoroughly reviewed and expanded upon. Diseases - communicable and noncommunicable, including HIV, will be included. The decision making process is emphasized, encouraging the student to make sound choices as he/she matures. Through the integration of mindfulness, the student will develop the skills necessary to help protect him/her from risk behaviors identified by the Center of Disease Control and Prevention and in turn continue their journey towards optimum health and wellness.

HEALTH - Grade Eight

The purpose of the eighth grade health course is to develop an awareness and understanding of the physical and emotional changes, which occur during adolescence. Emergency first aid and safety skills are also studied. The course is designed to foster the development of sound judgments and decision-making, especially in reference to personal fitness & diet choices and how it impacts their lives.

MUSIC - Grades Six, Seven, Eight

Allied Music is a General Music class that focuses on the fundamentals of music and music appreciation. Students use classroom instruments as well as music technology programs to explore and create music both

alone and in groups. Students also are exposed to different eras of music history, elements of music theory, and are involved in discussions on the aesthetics of music and its importance in our world.

SIGN LANGUAGE – Grade Eight

The Sign Language allied rotation course is an introduction to basic expressive and receptive Sign Language and an overview of the history of the Deaf community and “Deaf Culture.” Students will learn the Manual Alphabet and will develop a sign language vocabulary base of 250 signs or more of common conversational words and phrases. The students will explore cultural and historic events of the Deaf community through selected readings, films, news articles and class discussions.

ELECTIVES

ADVANCED ART ELECTIVE

In Advanced Art, students are able to pursue their artistic ability through independent study projects. Here, students choose their own artistic theme, and then visually communicate it through project prompts in various media including drawing, painting, mixed media, sculpture, digital painting, and graphic design. Students will study modern and historic artists to inspire their own personal work. When completed, students will have a well-crafted portfolio of various media and techniques to present for high school and art portfolio reviews. 9th period – MTW.

BAND - Grades Six, Seven, Eight

Students that participate in the Briarcliff band program will have the opportunity to perform and experience the art of music twice a week as a large ensemble and once a week in a like-instrument lesson. Students will expand their knowledge of their instrument and further develop their technical skills. Students will also explore musical concepts such as harmony, rhythm, pitch, and musicality through performance and discussion. Students will develop vital life skills such as responsibility, compassion, and integrity. All students are welcomed regardless of experience. The students perform a winter and spring concert.

CHORUS - Grades Six, Seven, Eight

The choral program is designed to provide students with experiences which center around good choral singing. Students are challenged to examine principles of good tone production. Through diligent co-operative experiences in singing, students explore the necessary discipline required to elevate performance materials to works of art. Diction, blend, pitch, breath control, phrasing, mood-interpretation and tone color form the foundation of concepts and skills which engage students in their efforts to honor the intentions of each composer's work. Students are expected to exhibit poise, focus and responsiveness to the conductor's gestures during performance. Moreover, students

are expected to don performance dress, in a manner directed by the conductor.

COMPUTER PROGRAMMING ELECTIVE - Grades Six, Seven, Eight

This course will give students a basic understanding of Python programming. Students will demonstrate understanding of Python programming areas, structure and syntax and debugging (solving program problems) through practice problems, quizzes, the Internet and collaboration with peers. *9th period – MWF.*

MOVIE PRODUCTION ELECTIVE

Stop motion animation films are a huge inspiration to modern animation films today, and they have even become a respected form of film-making all on their own. Students will look into the history of stop motion and learn about the behind the scenes work required to create a stop motion animation film. Students will learn how to create character designs, environment designs, and the process of creating a storyboard. Finally, they will develop and create a complete, short, stop motion animation film. By the end of the elective course students will have a completed portfolio of their process and a short film to present. Period 9 – Thursday & Friday

ROBOTICS ELECTIVE

Robotics is intended as an introductory course, but those experienced in robotics can take the lessons to higher levels. This course has two parts, a land-based and a water-based robotics unit. Intro to Robotics is appropriate for students who are interested in robotics and want to delve into it in more detail during the middle school years. As an introductory course the pacing is reasonable and is often flexible. Evaluation of student performance is based primarily on projects and quizzes. The focus is on getting students comfortable with foundational concepts while getting students excited for the potential and creativity of robotics. Students will learn fundamental robotics concepts such as

levers, pulleys, pendulums, gear ratios, sensors and more. Students develop logic, problem solving skills and critical thinking skills and are encouraged to think creatively and to find whatever resources are needed to solve various robotics challenges. Projects in the course are flexible enough to accommodate students at a variety of levels. Students with no previous robotics experience are welcome. Students with more experience will have opportunities to extend projects and to expand their knowledge.

The land-based robotics unit will use the VEX IQ robotics platform to build robots. The water-based robotics unit will use SeaPerch, an underwater robotics program that teaches students how to build and run an underwater Remotely Operated Vehicle (ROV). Students build the ROV from a standard kit and follow a curriculum that teaches basic engineering and science concepts with a marine engineering theme. Throughout the projects, students will learn engineering concepts, problem solving, teamwork, and technical applications.