

## Winter Programs 2022 Course Descriptions

### I. Math Subjects

#### A. Intro to Algebra

1. Grades: **Based on pre-test, must be 5th-9th**
2. Algebra 1 introduces students to variables, algebraic expressions, equations, inequalities, functions, and all their multiple representations. In this class, students will develop the ability to explore and solve real-world application problems, demonstrate the appropriate use of graphing calculators, and communicate mathematical ideas clearly. This course lays the foundation for mathematical literacy that will help students be successful in every subsequent course in mathematics

#### B. Contest Math

##### 1. Level 1

- a) Grades: **Based on pre-test, must be 4th-8th**
- b) An introduction to competition style math. Problems ranging from beginner to intermediate aspects. Problems will be characteristic of competition problems like the AMC series, mathcounts, and more.

##### 2. Level 2

- a) Grades: **Based on pre-test, must be 4th-8th**
- b) An introduction to more advanced competition style math. Problems ranging from intermediate to advanced topics. Problems will be characteristic of competition problems like the AMC series, mathcounts, and more.

## II. Science Subjects

### A. Elementary Science

1. Grades: **K - 5th**
2. A fun, interactive, applied science experience for elementary schoolers, teaching the fundamentals of life sciences, physical sciences, the scientific methods, through experimentation, and hands on learning and projects! Split into K-2 and 3-5 with experiments catered towards grade-level curriculums.

### B. Chemistry Lab

1. Grades: **6th-12th**
2. This course is a study of the basic laws of chemistry, covering the common elements of the periodic system, their structure, interactions, and energy relationships, accompanied by practical lab experiments.

### C. Anatomy and Physiology

1. Grades: **4th - 9th**
2. An introductory overview of anatomy and physiology. Students will learn about major organ systems of the human body, their functions, how the systems work together, and health, fitness, and disorders associated with each system.

### D. Psychology

1. Grades: **6th - 12th**
2. An introduction to the systematic and scientific study of human behavior and mental processes. Students will learn to consider theories, key concepts, and phenomena with regards to behavior, sensation, perception, learning, cognition, motivation, developmental psychology, testing, disorders, and social psychology. They will be able to employ research methods, ethics, the scientific methods, and effectively communicate ideas.

## **E. Space and Earth Science**

1. Grades: **8th-12th**
2. An introduction to the Earth's environment and structure, covering weather, landforms, and climate changes followed by the studying of planets, meteors, and other celestial bodies. Students will learn about how the Universe was formed, how Earth was formed, and how stars form and die.

## **F. Computer Science**

1. Grades: **4th - 8th**
2. An introduction to computer science and programming using the java programming language. Students will gain a fundamental understanding of programming by creating a variety of scripts for fun projects which solve problems or complete a task! Students will:  
identify/characterize/define problems, design solutions, create code, read code, and analyze code.

## **G. The Physics of Machines**

1. Grades: **8th-12th**
2. An introduction to abstract concepts such as interactions of matter, energy, velocity, acceleration, force, and momentum. In this class, students will delve into the applications of physics in various fields, such as car racing, flight, acoustics, and more!

## **H. Engineering Academy**

1. Grades: **6th-12th**
2. A class for young students interested in engineering, critical thinking, and problem-solving. Students will utilize software such as CAD and MATLAB for real-world applications

## **I. Arduino**

1. Grades: **4th-8th**
2. Introduction to scratch programming and integration Arduino microcontrollers, and circuit components. Learn how to use LEDs, motors, sensors, and more.

### III. Language Arts & Humanities

#### A. Creative Writing

1. Grades: **6th - 8th**
2. This course will build upon students' prior knowledge of grammar, vocabulary, writing, and reading comprehension through the use of interactive practice, and activities. Students will learn about being able to use grammar, text structures, and other aspects of writing to organize ideas, concepts, and information to create eloquent text. Students will look into various types of writing including: Narrative, Analytical, Argumentative, Journalistic, Persuasive, and more.

#### B. Public Speaking

1. Elementary School
  - a. Grades: **3rd - 5th**
  - b. An introduction to public speaking. This course will emphasize the foundational principles of public speech. Topics include: speech types, speaking techniques, mannerisms, and voice inflection.
2. Middle School
  - a. Grades: **6th - 8th**
  - b. An introduction to public speaking. In this course, students will develop critical speaking and listening skills. Students will be able to create oral presentations in various types of speech including: informative, persuasive, humorous interpretation, original oratory, impromptu, and more!

## C. Spanish

### 1. Elementary School

- a. Grades: **3rd - 5th**
- b. An accessible introduction to Spanish which will focus on learning the basics and involve more projects and highly interactive lessons. Students will learn basic vocabulary, sentence constructions, articles, adjectives, subject-verb agreement, conjugations, and more!

### 2. Middle School

- a. Grades: **6th - 8th**
- b. An introduction to Spanish which will focus on listening, speaking, reading, and writing. Students will learn basic vocabulary, sentence constructions, articles, adjectives, subject-verb agreement, conjugations, and more!

## D. Macroeconomics

1. Grades: **8-12th**
2. Introductory level economics. Topics covering the makeup of the economy firms, governments, and organizations. Discussions on the functions of consumers and producers, fiscal and monetary policy, employment, income, and foreign trade.

## IV. Arts and Fun

### A. Chess

1. Grades: **K-12th**
2. Introduction to competitive chess. This course is designed to teach chess for all levels, even for students with no knowledge of the game. Students will work on techniques, puzzles, game sense, and more!

### B. Music Theory

1. Grades: **K-8th**
2. Fun, highly interactive to music theory and composition. Lessons involve activities designed to help students develop a feel for rhythm, pitches, and intervals before diving deeper into chord structure. Students will be able to create a song with a melody and harmony by the end of the course.