



# **Hanover Middle School**

## **Program of Studies**

**Revised Spring 2018**

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## Mission Statement

The mission of Hanover Middle School is to establish a safe learning environment that fosters respect, responsibility, perseverance, and support for all learners.

## General Expectations

The Hanover Middle School Student:

1. Reads actively and critically
2. Writes effectively to construct and convey meaning
3. Listens attentively and speaks effectively
4. Applies concepts to interpret information, to solve problems, and to justify solutions
5. Respects and honors school policies

## Message From The Administration

On behalf of the Administration, Faculty, and Staff of the Hanover Middle School, I am excited to share the Program of Studies for the 2018-2019 school year. The Middle School faculty is pleased to present a comprehensive program of studies that highlights the many different educational experiences offered to our students.

We are confident that when our students leave Hanover Middle School, each one has been able to take advantage of a variety of opportunities that have allowed them to not only grow, but excel, in their academics. In addition, we offer a number of unique experiences that extend and enrich students beyond the classroom environment. After their years at Hanover Middle School, they are well prepared for high school and beyond.

Sincerely,  
 Dan Birolini  
 Principal, Hanover Middle School

## Special Education

Hanover Middle School provides special education services to students in accordance with the Individuals with Disabilities Education Act (IDEA) and the Massachusetts General Law Chapter 766. Special education is intended to provide services to students with disabilities requiring specially designed instruction in order to make progress in general education curriculum. A variety of services including academic support, reading, speech and language, physical therapy, occupational therapy, adaptive physical education, transition planning, and pre-vocational training are provided. Services are provided to students in the least restrictive environment as determined by the Team. Specific questions regarding special education should be directed to the school's Special Education Administrator.

## Sample Bell Schedule

*This is a sample schedule for where students at every grade level should be during the day.*

Period	Grade 5	Period	Grade 6	Period	Grade 7	Period	Grade 8	Specialist	Lunch
HR	7:30 - 7:43	HR	7:30 - 7:43	HR	7:30 - 7:43	HR	7:30 - 7:43		
1	7:45 - 8:35	1	7:45 - 8:35	1	7:45 - 8:35	1	7:45 - 8:35	Exploratory 5 ACE Exploratory 8 BDF	
2	8:35 - 9:45	2	8:37 - 9:27	2	8:37 - 9:27	2	8:37 - 9:27	Exploratory 6 ACE Exploratory 7 BDF	
3	9:45 - 10:55	3	9:29 - 10:19	3	9:29 - 10:19	3	9:29 - 10:19		
4 A/S	10:55 - 11:32	4 A/S	10:21 - 10:56	4 Lunch	10:21 - 10:46	4	10:21 - 11:11	Grade 8	(7) 10:21 - 10:46
5 Lunch	L: 11:35 - 12:00	5 Lunch-Recess	L: 10:58 - 11:23 R: 11:23 - 11:39	5	10:49 - 11:39	5	11:13 - 12:03		(6) 10:58 - 11:23 (5) 11:35 - 12:00
6 Recess	R: 12:00-12:15	6	11:41 - 12:31	6	11:41 - 12:31	6 Lunch	12:05 - 12:30	Grade 7	(8) 12:05 - 12:30
7	12:15 - 1:25	7	12:33 - 1:23	7	12:33 - 1:23	7	12:33 - 1:23	Grade 6	
8	1:25 - 2:12	8	1:25 - 2:15	8	1:25 - 2:15	8	1:25 - 2:15	Grade 5	

## Extended Learning

Students in grades 5-8 have an Extended Learning period that alternates with an Exploratory Specialist period. The Extended Learning period is designated time to deliver high-quality, data-informed, targeted instruction that raises student achievement by addressing the needs of every student in meaningful ways.

## Academic Support

Students in grades 5 and 6 participate in a daily academic support period. This period is designed to focus on providing skills, reinforcement, and remediation in areas such as academic content, social emotional learning, and executive functioning.

## Instructional Focus Continuum

*The Instructional Continuum reflects key areas covered at each grade by term and content area.*

### English Language Arts Instructional Focus Continuum

5.1 Celebrating Differences

5.2 What is Valuable?

5.3 Journeys

6.1 Development of Identity Through Character Change

6.2 Equality

6.3 How Does Setting Create Conflict?

7.1 Relationships

7.2 Learning from the Past

7.3 Appreciating Differences

8.1 Character, Morality, and Justice in Society

8.2 Challenging Society's Status Quo

8.3 Freedoms and Responsibilities in Society

### Mathematics Instructional Focus Continuum

5.1 Place Value, Adding, Subtracting, Multiplying Whole Numbers and Decimals to the Hundredths

5.2 Operations with Multi-Digit Whole Numbers, Fractions and Decimals to the Hundredths

5.3 Multiplication and Division of Fractions; Measurement and Interpreting Data

6.1 Number Theory and Modeling Math Using Number Lines and Fraction Strips

6.2 Ratio, Rates and Percents, Mastering Decimal Operations and Exploring Rational Numbers

6.3 Understanding Algebra Through Tables, Graphs, and Equations; Geometry, and Statistics

7.1 Two-Dimensional Geometry, Similar Figures, Ratios/Rates/Percent/Proportions

7.2 Integers & Rational Numbers, Linear Relationships

7.2 Three-Dimensional Measurement, Probability & Expected Value, Making Comparisons & Predictions

7.1A Two-Dimensional Geometry, Similar Figures, Ratios/Rates/Percent/Proportions

7.2A Integers & Rational Numbers, Irrational Numbers/Exponent Rules/Scientific Notation, Linear Relationships

7.3A Three-Dimensional Measurement, Probability & Expected Value, Making Comparisons & Predictions, Pythagorean Theorem, and Transformations

8.1 Solving Equations with One or Two Variables

8.2 Congruence, Transformations, and Linear Systems

8.2 Pythagorean Theorem and Exponents

## **Science Instructional Focus Continuum**

5.1 Energy in Ecosystems (Life Science)

5.2 Energy and Matter (Physical Science)

5.3 Earth's Place in the Universe (Earth & Space Science)

6.1 Scientific Thinking, Engineering Design, Astronomy, Intro Earth Systems

6.2 Life Science, Engineering Design

6.3 Scientific Thinking, Engineering Design, Astronomy, Intro Earth Systems

7.1 Effects of Heat on Energy Transfer (Physical Science)

7.2 Cycles of Matter, Ecological Relationships (Life Science)

7.3 Biodiversity (Life Science), Geological Events in History and Geological Events: Predictions, Human Activities and Technology (Earth Science), Magnetism and Electricity (Physical Science)

8.1 Cause and Effect of Matter and It's Interactions (Physical Science)

8.2 Energy and Matter Interactions and Their Effect on Earth Systems (Earth and Space Science)

8.3 The Molecular Basis of Life (Life Science)

## **History and Social Science Instructional Continuum**

Massachusetts History and Social Science Curriculum Framework has undergone a multi-year revision process which is due to be finalized for summer 2018. The most recent draft released for public comment reveals a significant shift for content and instruction in this content area. Our work in the coming year will be to realign the

Hanover Middle School Social Studies to match the State's finalized curriculum framework document.

## English Language Arts

### Overview

The Hanover Middle School seeks to define college and career readiness and preparedness for civic engagement within the English Language Arts Program of Studies by laying out a vision and courses that reflect what it means to be a literate person in the 21st Century. The essential skills and understandings students are expected to demonstrate are vital life skills and their usefulness extends far beyond the classroom or workplace. Students at Hanover Middle School engage in the close, attentive reading that is essential to understanding and enjoying complex works of literature. They regularly perform the critical reading necessary to navigate the constantly growing amount of information available today both in print and digitally. Students actively participate in wide, deep, and thoughtful engagement with high-quality literary and informational texts that build knowledge, enlarge experience, and broaden world-views. Instruction is designed so that students are given purpose and opportunity to demonstrate the clear reasoning and use of evidence that is essential to both personal problem-solving and responsible citizenship in a democracy. Students who come through the Hanover Middle School exhibit the skills in reading, writing, speaking, and listening that are the foundation for any creative and purposeful expression in the world.

- adapted from the 2017 English Language Arts and Literacy Framework

### Grade 5 ELA

Grade 5 students shift from learning to read, to reading to learn. Grade 5 ELA focuses on five areas of study: foundational skills in reading, reading literature and informational text, speaking and listening, language, and writing for a variety of purposes. Students will study a variety of genres of literature which include, but are not limited to, short stories/picture books, poetry, and dramas, as well as novels such as *Wonder*, and *A Long Walk to Water*. Using literary analysis, students will evaluate the overall structure of stories, poems, and dramas. Students will learn strategies to comprehend, draw inferences, and cite evidence from texts as well as determine main ideas/key details, summarize, and paraphrase. Students will have various opportunities to hone their skills in speaking and listening in order to express their own ideas clearly and build on others' ideas, such as through collaborative discussions and presentations. Students will study vocabulary, grammar, figurative language, and word patterns, and appropriately identify and apply these to their

writing and speaking. With guidance and support, throughout the writing process students will plan, edit, revise, and produce a variety of writing across content areas with the goal of producing clear and coherent writing in which the development of organization is appropriate to the task, purpose, and audience. A variety of teaching approaches, groupings, assessments, diverse media formats/technology, and methods of delivery are used to differentiate and personalize instruction for all learners. Academic behaviors students will learn include problem-solving, making successful choices, using technology appropriately, and independence. Teachers will also embed social-emotional standards such as empathy, and perseverance.

## **Grade 6 ELA**

Grade 6 ELA consists of an integrated approach to reading and writing. Students will read in a variety of genres such as drama, short stories, novels, and poems that allows for in-depth analysis and discussion. In addition to McDougall-Littell's *The Language of Literature*, texts may include, but are not limited to, *The Graveyard Book*, *A Christmas Carol*, *The Watsons Go to Birmingham- 1963*, and *The Lion, the Witch, and the Wardrobe*. Students will also complete writing assignments designed to foster a love for literacy. Concepts of Literary Analysis and Close Reading are introduced and refined to foster the growth of well-developed readers and writers. Students will study the growth and development of characters, the impact language has on the artistry and meaning of a story, and the inherent connections that exist between all forms of literature. Students will have a wide variety of opportunities to express their knowledge, ranging from collaborative discussions to more formal written assignments. When writing, students will be reinforcing the need for accurate citation and information gathering, as well as appropriate presentation and support using facts and textual evidence. Students will also be exposed to the creative writing process, including brainstorming, drafting, revising, editing, and publishing.

## **Grade 7 ELA**

Grade 7 ELA incorporates various genre studies. Units of study are focused on the following genres: fiction, nonfiction, poetry, drama, and the oral tradition. The three overarching themes addressed in the majority of the readings are change, friendship, and survival. Texts may include, but are not limited to, *The Cay*, *Touching Spirit Bear*, *Freak the Mighty*, *Promises to Keep*, *The Giver*, and McDougal Littell's *The Language of Literature*. Throughout the year, students will complete a variety of formal and informal writing pieces. Literary analysis, expository, narrative, and persuasive writings will connect with particular readings. This will allow students to engage with the text, cite textual evidence, and work towards a mastery of the writing process. Students will study vocabulary drawn from the literature they read. Grammar lessons are embedded into the reading and writing units as a way to improve speaking and writing skills.



The seventh grade grammar topics will include phrases and clauses, misplaced or dangling modifiers, simple, compound, complex, and compound-complex sentences, and coordinate adjectives. Daily activities provide students with the opportunity to encounter different modes of instruction, thus meeting the levels and needs of all students. Students will work in independent settings as well as within small, collaborative groups with the teacher(s) as facilitator(s). A variety of formal and informal assessments will be used to measure student learning. Assessments include, but are not limited to, tests, quizzes, projects (both independent and collaborative), oral presentations, open responses, and essays.

## Grade 8 ELA

Grade 8 ELA continues to hone students' skills in reading, writing, speaking and listening through structured writing, close reading, and small/large group discussions. Students interact with texts representing a variety of genres. These texts may include, but are not limited to, *A Midsummer Night's Dream*, *The Pearl*, and *The Outsiders*, as well as short stories, poems, and nonfiction from the Literature textbook McDougal Littell's *The Language of Literature*. Students approach texts through meaningful literacy tasks such as close reading and analysis, textual evidence collection, and interpretation via literary elements. Students build their writing skills through structured expository, narrative, persuasive, and argumentative writing tasks. Through informal and formal discussions, research projects, and speeches, students will express their ideas and their knowledge, as well as build on the ideas of others. Students will work towards mastery of standard English conventions, language knowledge, and vocabulary use and acquisition strategies. Instructional practices, including assessments, are student-centered and differentiated as needed.

## Mathematics

### Overview

The Hanover Middle School Program of Studies for Mathematics describes a vision of what it means to be a mathematically proficient person in the 21st Century. This vision provides pathways for students through the middle school and into a connected mathematics program at Hanover High School.

The mathematical skills and understanding that students are expected to demonstrate are necessary life skills that students will use far beyond the confines of the classroom or

workplace. As an example of these life long skills, students at Hanover Middle School identify problems, represent problems, justify conclusions, and apply mathematics to practical situations. Additionally, they gain understanding of topics and issues by reviewing data and statistical information. Moreover, students develop reasoning and analytical skills and make conclusions based on evidence that is essential to both personal problem-solving and responsible citizenship in a democratic society. Hanover Middle School students understand mathematics as a language for representing the physical world.

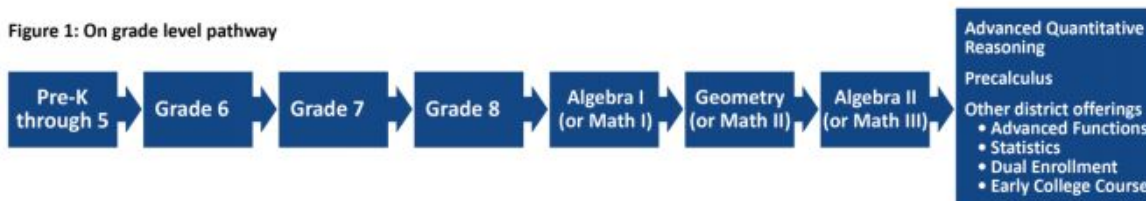
Students at Hanover Middle School develop the mathematical practices of persistence, conceptual understanding, and procedural fluency; they develop the ability to reason, prove, justify, and communicate. Students are engaged in multiple opportunities to build a strong foundation for applying these understandings and skills by solving real world problems. This Program of Studies represents an ambitious mathematics program that ensure that students are prepared for college, careers, and civic life.

- adapted from the 2017 Mathematics

## Math Pathways

### Traditional Pathway

Figure 1: On grade level pathway



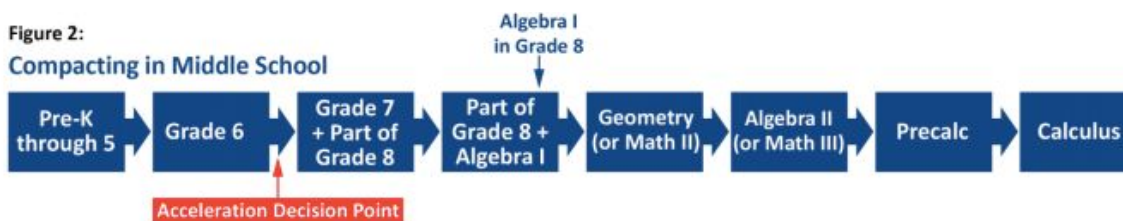
Every student through 6th grade receives the same standards as required by the state curriculum frameworks. After 6th grade, students could possibly be placed in an Accelerated pathway based on the following criteria:

- Class Average
- Teacher Recommendation
- i-Ready Diagnostic Score
- MCAS Score

This pathway is outlined in the curriculum frameworks.

Figure 2:

### Compacting in Middle School



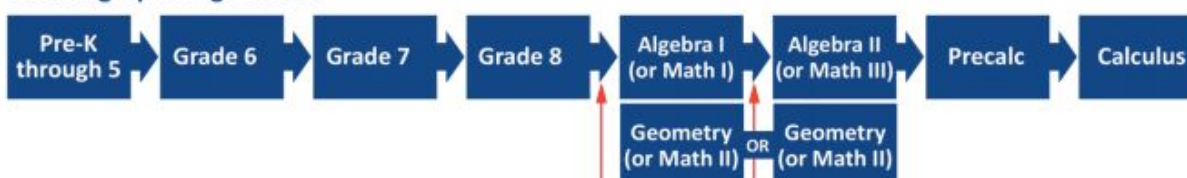
If a student does not qualify for an accelerated pathway in Grade 6, they will be considered again after 7th grade based on the following criteria:

- Class Average
- Teacher Recommendation
- i-Ready Diagnostic Score
- MCAS Score

If a student qualifies, they will be placed in Algebra 1 in 8th grade and a plan will be implemented to ensure students receive instruction in the standards that they may have missed.

After 8th grade, students who were in Grade 8 Math then take Algebra 1 as a 9th grader. Students do have the option to double up math courses in high school to then take advance courses as a senior.

### Doubling Up in High School



Students can fulfill the Algebra 1 requirement to access an advanced math pathway through a variety of options in the summer including:

- Summer math class at Hanover High
- Other courses offered outside the district.

## Grade 5 Math

Using Pearson enVision Math 2.0, students in Grade 5 Math will learn through a variety of activities such as independent work, group work, direct instruction, cooperative learning and the use of manipulatives. Throughout the year, instruction will be focused on the Standards for Mathematical Practices; with structure and support, students will be asked to make sense of problems and persevere in solving them, reason abstractly and

quantitatively, construct viable arguments and critique the reasoning of others, model with mathematics, use appropriate tools strategically, attend to precision, look for and make use of structure, look for and express regularity in repeated reasoning. Students will be assessed through formative and summative assessments, class participation and homework. By the end of the course, students will be able to:

- Understand place value from thousandths to millions
- Add, subtract, multiply and divide whole numbers, fractions and decimals from hundredths to millions
- Convert customary and metric measurements
- Write and interpret numerical expressions and analyze patterns and relationships
- Represent and interpret data on a line plot
- Graph points on the coordinate plane using positive numbers to solve real world and mathematical problems
- Classify 2-dimensional figures based on their properties
- Understand volume through the use of multiplication and addition

## Grade 6 Math

Using Pearson's *Connected Mathematics Program 3* and other resources, students in grade 6 math focus on computation, problem solving, ratios, number sense, expressions and equations, geometry, statistics and probability. The goal is to have students become confident in their math ability and to use their math skills to solve real-world and mathematical problems. Math is taught using the inquiry approach, with discovery learning, traditional instruction, multi-sensory learning using manipulatives, and individual and group investigation. Students complete a variety of assignments and assessments including tests, quizzes, projects, enrichment activities, and traditional practice both in school and at home. Upon successful completion of this course, students will be able to:

- describe a ratio and use equivalent ratios to solve problems.
- use a unit rate to solve unit pricing.
- understand what a percent is and how to find the percent of a number.
- divide a fraction by a fraction.
- divide a decimal by a decimal.
- distinguish between when to use factors and multiples when problem solving.
- locate and order positive and negative integers on the number line.
- write, read, and evaluate expressions and inequalities.
- identify parts of an expression.
- understand why two expressions are equivalent using the distributive property.

- apply the rules of the order of operations.
- understand the difference between dependent and independent variables.
- solve the area of polygons limited to triangles and rectangles.
- solve the volume of rectangular prisms.
- solve the surface area of rectangular and triangular prisms and pyramids using nets.
- draw polygons on all four quadrants of the coordinate plane.
- understand mean, median, mode, and range.
- represent and interpret data on dot plots, histograms, and box plots.

## Grade 7 Math

Using Pearson's *Connected Mathematics 3* and various supplemental materials including but not limited to *Prentice Hall Course 2, ON CORE* Grade 7, and teacher made materials, students will learn through cooperative group investigations, direct instruction, manipulatives, projects, and independent work. They will be required to work in teams to complete various investigations in each unit, complete daily practice problems, and mathematical reflections. Students will be assessed through teacher observation, warm ups, homework, assessments (tests/quizzes), projects, group work, and class participation. Instruction in this course focuses on the following critical areas:

- analyzing proportional relationships in tables, graphs, and equations, as well as applying this concept to solve ratio, rate and percent problems
- applying and extending previous understanding of operations to all rational numbers
- simplifying algebraic and numerical expressions and solving linear equations
- solving problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms (to include area and circumference of circles)
- drawing inferences about populations based on samples
- developing, using and evaluating probability models, in addition to finding probabilities of compound events

## Grade 7 Accelerated Math

Grade 7 Accelerated Math instruction moves at a faster pace and focuses on the above critical areas in Grade 7 Math, as well as covers the following 8th Grade standards:

- understanding there are numbers that are not rational (irrational), approximate them using rational numbers and locate them on a number line

- solving problems using the properties of exponents, including negative exponents
- writing scientific notation and solving problems with scientific notation operations
- constructing transformations (translations, rotations, reflections, and dilations) on the coordinate plane and distinguish whether the resulting figure is similar or congruent to the original
- understanding and apply the Pythagorean Theorem
- solving real word problems using the volume of cylinders, cones and spheres

## Grade 8 Math

The Grade 8 Math Course is an introduction to the study of Algebra with a focus on real world connections and applications. Students will learn through group investigations, traditional instruction, and independent work using Pearson's *Connected Math Project 3* as well as a variety of other related supplements and resources. Students will be able to demonstrate their knowledge through daily practice problems, traditional assessments, and mathematical reflections. Instructional time in this class will focus on the following main concepts:

- write, interpret, and evaluate mathematical expressions, equations, and systems of equations.
- determine the slope and y-intercept of a linear relationship by using linear equations, tables, graphs, and verbal models.
- apply a linear model to data that exhibits a linear trend.
- recognize that a function is a rule that assigns to each input exactly one output.
- construct transformations (translations, rotations, reflections, and dilations) on the coordinate plane and distinguish whether the resulting figure is similar or congruent to the original figure.
- understand and apply the Pythagorean Theorem.
- decide whether a given number is rational or irrational and determine its place on a number line.
- solve problems using the properties of exponents including negative exponents and scientific notation.
- use the appropriate formula to find the volume of cylinders, cones, and spheres.

## Grade 8 Algebra 1

The fundamental purpose of this course is to formalize and extend the mathematics skills and concepts that students learned in the prior grades. Students will use a variety of resources but the primary text is Pearson's *Algebra 1 2015*. Students will deepen and extend understanding of linear and exponential relationships by contrasting them with each other. Students will demonstrate their knowledge through solving daily problems, traditional tests and quizzes, and group and individual projects. Upon successful completion of this course, students will be able to:

- solve equations and construct viable arguments to justify each step.
- write equations and inequalities in one variable to solve problems.
- determine the slope and y-intercept of a linear relationship by using linear equations, tables, graphs, and verbal models.
- apply a linear model to data that exhibits a linear trend.
- compare the properties of two different kinds of functions (linear, quadratic, exponential).
- sketch graphs of equations in two variables and identify and interpret key features of the graph.
- solve systems of equations in two variables.
- use the properties of exponents to rewrite expressions using radicals.
- perform addition, subtraction, and multiplication with polynomials.
- factor and find the zeros of polynomial expressions.
- solve quadratic equations in one variable.

\*This course aligns with HHS and credit will be given for its successful completion at the middle school level.

## Science

### Overview

The Hanover Middle School Science Department is committed to providing all students with an environment to think, explore and behave like scientists. In order to fulfill this mission, the Science Department will implement standards and practices that maximize learning success for all students. The empowerment of our students will lead to actively engaged citizens that have developed the skills and competencies necessary to thrive in our ever-changing society. Within the context of our science program, as well as the core state

standards, students will engage in learning outcomes that prepare them to be critical thinkers, effective communicators, innovators who are collaborative, globally aware problem solvers. Students will apply the Skills of Scientific Inquiry in a variety of different ways including interpreting, analyzing, synthesizing data in the form of graphs and models as they learn to use proper laboratory techniques.

## **Essential Scientific Practices**

Within the context of our science program, students will combine a relevant practice of science, with a core disciplinary concept:

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Use mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in arguments from evidence
- Obtaining, evaluating and communicating information
- Proper laboratory techniques.

## **Grade 5**

### **Course Description and Objectives**

The goal of science education in the fifth grade is to guide students toward the acquisition of knowledge in the areas of Earth & Space, Life, and Physical sciences through the development and refinement of the eight scientific practices. Resources for this course include MacMillan McGraw Hill's *Science: A Closer Look*, teacher-generated study guides, and online resources including Brain-Pop, Discovery Education, Mystery Science, Super Teacher, Readworks, and NewsELA.

Research-based units centered upon the inquiry approach to learning will focus on eight core science concepts. Inquiry based learning is integrated throughout the year by conducting labs, group and individual projects, formal and informal assessments. All Hanover 5th graders will create a model that shows the energy flow in an ecosystem through the "Photosynthesis and Energy in Ecosystems Project". Students will also develop and refine their scientific practices through their active participation in a series of experiments related to matter, and energy. Students will also be assessed by using a common pre and post assessment of their general knowledge of the concepts covered in grades 3-5. Technology is integrated throughout this course.



## Grade 5: Scope and Sequence

Unit	Term 1	Term 2	Term 3
<b>Scientific Inquiry</b> <ul style="list-style-type: none"> <li>Science and Engineering Practices</li> <li>Steps of the Scientific Method</li> </ul>	<b>X</b> <b>X</b>	<b>X</b> <b>X</b>	<b>X</b> <b>X</b>
<b>Life Sciences</b> <ul style="list-style-type: none"> <li>From Molecules to Organisms: Structures and Processes</li> <li>Ecosystems: Interactions, Energy, and Dynamics</li> </ul>	<b>X</b> <b>X</b>		
<b>Physical Science</b> <ul style="list-style-type: none"> <li>Matter and Its Interactions</li> <li>Motion and Stability: Forces and Interaction</li> <li>Energy (Transfer of Energy; Forms of Energy)</li> </ul>		<b>X</b> <b>X</b> <b>X</b>	
<b>Earth and Space Science</b> <ul style="list-style-type: none"> <li>Earth's Place in the Universe</li> <li>Earth's Systems (Hydrosphere, Atmosphere, Geosphere, Biosphere)</li> <li>Earth and Human Activity</li> </ul>			<b>X</b> <b>X</b> <b>X</b>

## Grade 6

### Course Description and Objectives

The integration of Earth and space, life, and physical sciences with engineering gives grade 6 students opportunities to problem-solve, highlighting the relationship between structure and function in the world around them. The overarching theme of the 6th grade curriculum is structure and function; through this lens, students analyze the macro- and microscopic world, such as Earth features and processes, the role of cells and anatomy in supporting living organisms, and properties of materials and waves. Students use models and provide evidence to make claims and explanations about structure-function relationships.

All Hanover 6th-graders create, test, and modify Water Rockets through the engineering design process; students research and write a Planet Book in the astronomy unit; they develop a Geologic Timeline in their study of geologic history; and they create and perform a Plate Tectonics play. Students relate the workings of a city to cell functions in their Cell

City Project. All 6th-graders design and construct fettuccine bridges, culminating in an all-grade Bridge Day event. Students use their math skills in their Mass, Volume, and Density Labs. Students investigate pure substances; after investigation, they design and conduct experiments in which they record results and present their findings to the class. As a culmination of their research and text-based science writing skills, students author a Waves Book.

## Grade 6 Science– Scope and Sequence

Unit	Term 1	Term 2	Term 3
<b>Scientific Inquiry</b> <ul style="list-style-type: none"> <li>Science and Engineering Practices</li> <li>Steps of the Scientific Method</li> </ul>	<b>X</b> <b>X</b>	<b>X</b> <b>X</b>	<b>X</b> <b>X</b>
<b>Life Sciences</b> <ul style="list-style-type: none"> <li>Biological Evolution</li> <li>From Molecules to Organisms: Cell Structure and Function</li> </ul>		<b>X</b> <b>X</b>	
<b>Earth Science</b> <ul style="list-style-type: none"> <li>Astronomy</li> <li>Geologic History</li> <li>Continental Drift and Plate Tectonics</li> </ul>	<b>X</b> <b>X</b>	<b>X</b>	
<b>Engineering Design Process</b> <ul style="list-style-type: none"> <li>Rocket Building</li> <li>Bridge Building</li> </ul>	<b>X</b>		<b>X</b>

## Grade 7

### Course Description and Objectives

Within the Grade 7 Science curriculum, students will apply their understanding and prior knowledge of the structures and processes of organisms, connections and relationships of Earth's systems, flow of matter and energy, as developed in earlier grades. Students will explore and utilize the Grade 7 Science Vocabulary in a variety of innovative ways. Students will be provided with content-specific scientific journal articles to connect to real-world science issues and events. Students will complete three (3) Term Benchmarks to reflect their understanding of the key concepts in each term. These Benchmarks are open-response, evidence-based essays. The course is designed to prepare all students to be successful on the Grade 8 Science MCAS exam.

## Scientific Enthusiasm & Scientific Literacy

Students will explore and utilize the Grade 7 Science Vocabulary in a variety of innovative ways. Students will be provided with content-specific scientific journal articles to connect to real-world science issues and events.

### Benchmarks

Students in Grade 7 Science will complete three (3) Term Benchmarks. These Benchmarks are open-response, evidence-based essays.

## Grade 7: Scope and Sequence

Unit	Term 1	Term 2	Term 3
<b>Scientific Inquiry</b> <ul style="list-style-type: none"><li>Science and Engineering Practices</li><li>Steps of the Scientific Method</li></ul>	X X	X X	X X
<b>Life Sciences</b> <ul style="list-style-type: none"><li>Genetics</li><li>Ecology and Evolution</li></ul>			X X
<b>Physical Science</b> <ul style="list-style-type: none"><li>Atomic Structure</li><li>Physical and Chemical Changes</li><li>Motion and Forces</li></ul>	X X	X	
<b>Earth Science</b> <ul style="list-style-type: none"><li>Earth's Place in the Universe</li><li>Earth's Systems</li><li>Climate and Weather</li></ul>		X X	X

## Grade 8

### Course Description and Objectives

Grade 8 science continues the integrated approach of 6th and 7th grades, covering aspects of physical science, Earth and space science, and life science. Students will learn to adopt scientific attitudes of questioning and skepticism, while developing a sense of curiosity about the natural world and the changing technological landscape.

The overarching theme of the 8th grade curriculum is cause and effect. This allows students to explain observed patterns and make predictions about future events. Students will be able to analyze phenomena, interpret evidence, and identify processes that often cannot be seen by the naked eye. The ability to conceptualize fundamental physical phenomena and apply them to broad range of situations is a key competency that 8th grade students will

attain. Students will also continue to develop their ability to write a formal laboratory report as part of their preparation for High School. Students will develop a familiarity with the accepted format and an appropriate report style of writing.

## Grade 8: Scope and Sequence

Unit	Term 1	Term 2	Term 3
<b>Scientific Inquiry</b> <ul style="list-style-type: none"> <li>Science and Engineering Practices</li> <li>Steps of the Scientific Method</li> </ul>	<b>X</b> <b>X</b>	<b>X</b> <b>X</b>	<b>X</b> <b>X</b>
<b>Life Sciences</b> <ul style="list-style-type: none"> <li>Genetics</li> <li>Ecology and Evolution</li> </ul>			<b>X</b> <b>X</b>
<b>Physical Science</b> <ul style="list-style-type: none"> <li>Atomic Structure</li> <li>Physical and Chemical Changes</li> <li>Motion and Forces</li> </ul>	<b>X</b> <b>X</b>	<b>X</b>	
<b>Earth Science</b> <ul style="list-style-type: none"> <li>Earth's Place in the Universe</li> <li>Earth's Systems</li> <li>Climate and Weather</li> </ul>		<b>X</b> <b>X</b>	<b>X</b>

## History and Social Science

### Overview

The Hanover Middle School Program of Studies for History and Social Science lays out a vision for students to be able to effectively evaluate competing ideas, to critically understand the past, and to promote the ideals of equality, justice, liberty, and the common good for all peoples in the world. An essential purpose of a history and social science education is to prepare students to have the knowledge and skills to be thoughtful and active participants in a democratic society and a multinational world. Hanover students' development of the knowledge, skills, and beliefs of citizens who recognize democracy's potential and its challenges is an essential component to preserving our shared civic life. At the heart of the Hanover Middle School History and Social Science curriculum is the idea that knowledge and understanding come from inquiry: asking questions, conducting research to find answers, analyzing ideas in discussions, and presenting conclusions. Critical inquiry serves to deepen conceptual understanding of content, going beyond a listing of names, dates, and facts and providing a rich context for cognitive rigor. In

addition to other grade level texts and materials, students regularly engage in the use of primary sources in order to give them a sense of how people in the past thought about the events of their time and how they lived their daily lives.

- adapted from the 2018 History and Social Studies Framework

## Grade 5

### **Content: North American & U.S. History – Pre-Columbian Cultures to U.S. Western Expansion**

The purpose of the grade 5 Social Studies curriculum is to give students their first concentrated study of the formative years of U.S. history. In this course, students study the major pre-Columbian civilizations in the New World along with the 15th and 16th century European explorations around the world, in the western hemisphere, and in North America in particular. Students will also learn about the earliest settlements in North America, and the political, economic, and social development of the English colonies in the 17th and 18th centuries. The early development of democratic institutions and ideas, including the ideas and events that led to the independence of the original thirteen colonies and the formation of a national government under the U.S. Constitution will also be studied.

Student learning is differentiated throughout the grade 5 curriculum. Reading comprehension strategies and writing skills are embedded to maximize literacy experiences using informational texts, multimedia, collaborative discussion, and technology to access Social Studies content. By the end of the course, students will have built on their capacity to determine the main ideas and summarize, read and analyze informational text features (cartoons, paintings, photographs, charts, etc), write informative/explanatory texts, and apply vocabulary skills focused on academic and domain-specific terms. Students will also make presentations to share ideas using evidence, reasoning, and details, while integrating multimedia components and visual displays into presentations to clarify information, and strengthen claims and evidence. Students will be taught map skills, and the use of timelines to sequence and provide context for historic events.

In addition to classroom instruction, students have first-hand experiences that broaden and inform their understanding of Social Studies content. The Boston Freedom Trail field trip provides students with the context and environment for events related to the American Revolution. On Colonial Day, all 5th grade students see The Colonial Players, a historic reenactment acting troupe and participate in a variety of workshops that bring to life many day to day experiences and chores of Colonial America.

## Grade 6

### Content: World Geography

Sixth graders systematically study the world outside of the United States and North America. Holt's *World Geography* is used as a resource in this course. Students learn geography around the world in the way that atlases are organized - continent by continent. Units of Study by Continent include Africa, Western Asia (the Middle East), Central and South Asia, Southeast Asia and Oceania, North and East Asia, Europe and South America. Students learn about each continent in an order that reveals the early development of the river valley civilizations and the later development of the sailing civilizations in the Mediterranean area and in Northern and Western Europe.

Student learning focuses on physical and political geography by integrating the five major concepts: location, place, human environment interaction, movement, and regions. Location covers both the absolute location (longitude and latitude) and relative location, (direction, distance, or travel time). The concept of place addresses the physical and man-made characteristics of a place such as a town or city. Human Environment Interaction shows how people depend on, adapt, and modify the environment. The movement of people, goods, and ideas is the fourth concept. The fifth concept, region, describes the ways of categorizing areas of the earth, such as by climate or religion.

By the end of the course, students will be able to make inferences about economic information by applying an understanding of the concept of supply and demand; compare the concept of market economy to economic systems noting effects on trade and standard of living; use and apply map skills to interpret geographic information; define what a nation is and give various examples of how one is formed; and apply vocabulary skills focused on academic and domain-specific terms. Students are provided the opportunity to enhance their comprehension of the subject material through teamwork, hands-on activities, teacher instruction, and the appropriate use of technology.

## Grade 7

### Content: World History – Ancient Civilizations

The Grade 7 Social Studies curriculum begins with the origins of man and ends with the decline and fall of the Roman Empire. Throughout the year, students use McDougal Littell's *World History, Part 1 Ancient Civilizations* to study the great ancient civilizations that flourished in the Mediterranean area from a variety of perspectives including: politically, culturally, economically, militarily and geographically. Among these civilizations are the early Mesopotamian Empires of the Sumerians, Akkadians, Babylonians, Assyrians and

Persians. Additionally, Grade 7 students will have the opportunity to explore Ancient Egypt/Kush and the Hebrew Kingdoms, as well as the classical kingdoms of Ancient Greece, Ancient Rome and the Birth of Christianity.

Students master the curriculum through diversified methods of instruction including hands-on exploration, teacher/student directed lessons, small and large group activities and technology driven instruction. Students gain competence not only in the subject matter but also in a variety of skills that foster critical thinking and initiate higher level skills that will enable them to participate intelligently and responsibly in civic life and in the deliberation of social, economic, and political issues. Students will learn and practice cause and effect, comparing/contrasting and inferencing/drawing conclusions from visuals and primary source documents. Additionally students will focus on skill development necessary to formulate arguments and consequently argument essays, counterarguments and, more generally, persuasive writing.

## **Grade 8**

### **Content: World History – Medieval & Early Modern Times**

This course is a survey of World History from approximately 300 C.E. to 1800 C.E. Students will explore a wide variety of social studies themes and topics against the backdrop of multiple civilizations and cultures. McDougall-Littel's *World History: Medieval and Early Modern Times* is used along with other teacher-curated or produced materials. Students will identify and compare the social structures of Feudal Europe and East Asian cultures of China and Japan. Students will discover and trace the expansion of empires created by the Romans, Byzantines, Islamic cultures and Native American cultures of the Maya, Aztec and Inca. Students will examine the major world religions of Christianity, Islam, Judaism, and Buddhism in addition to their influence on world history. War and conflicts will be evaluated in the context of the Roman, Byzantine and Islamic Empires, the Clash of Faiths between Christians and Muslims, the Spanish conquest of the Americas, and the transatlantic African slave trade. Government systems, including those of Europe, the Middle East and Eastern Asia, will be compared and contrasted. The development and spread of rational, scientific, and democratic thought will be analyzed during the Reformation, Enlightenment, and the Scientific Revolution in Europe. Contributions to the fields of economics, trade, technology, navigation and exploration by Asia, Africa, Europe and the Arabian world will be assessed.

Students are provided the opportunity to participate in and create activities that foster teamwork and multi-modal forms of learning, while also enhancing their skills in presenting, inferencing, analyzing primary sources and maps, writing, and research.

Students learn through activities and experiences such as a classroom trial debating the true discovery of America, an expert level presentation project on varied topics from the Crusades, an art project recreating the exemplary works of the Renaissance, and a class trip to Washington D.C. where prominent themes learned throughout the year blend with American history and transition into U.S. History at HHS.

## World Language

### Overview

Spanish and French are offered in a two year sequence that is equivalent to the first year of Spanish 1 or French 1 at the high school level. Students will be given high school credit upon successful completion of these courses. Students will develop proficiency in four key skill areas: listening, reading, writing, and speaking, within a cultural context. The emphasis is on developing all oral, listening and writing skills through activities such as individual/group projects, role-playing/dramatizations, and listening and reading analysis in a variety of everyday settings.

### French

#### Grade 7 French

In grade 7, students learn vocabulary regarding topics such as introductions, days, dates, times, describing people and things, likes and dislikes, everyday activities, school and education, restaurants, and seasons and weather. *Bon Voyage* is the primary textbook.

#### Grade 8 French

In grade 8, students will continue to develop proficiency in the four key skill areas: listening, reading, writing, and speaking. Active oral participation is essential for success in this course. At the end of this course, students will be able to communicate about family and the home, food, clothing, seasons and weather and travel. It is the goal in Grade 8 French to prepare students for success in a high school level language course. *Bon Voyage* is the primary textbook.



## Spanish

### Grade 7 Spanish

In grade 7, students learn vocabulary for introductions, days, dates, times, seasons, weather, describing people and things, talking about what people like to do, everyday activities, school life, restaurants and foods, vocabulary for family members, as well as present-tense verb conjugations for regular and irregular verbs.

### Grade 8 Spanish

In grade 8, students will continue to develop proficiency in the four key skill areas within a cultural context: listening, reading, writing, and speaking. Spanish is spoken for the majority of the class period allowing students to hone their listening and speaking skills. Discussions, review games/activities, partner and small group performances are conducted in the target language. Easy readers/short fiction novels are introduced midway through the year and discussed within their cultural context. Skype sessions with native speakers, virtual field trips, and guest speakers are also part of the Grade 8 Spanish experience. Students use *Asi Se Dice*, Level 1 as their textbook, which also includes access to online materials and speaking, listening, and writing activities. Active oral participation is essential for success in this course. Topics will include present tense of stem-changing verbs, object pronouns, preterite tense verbs, affirmative and negative expressions, comparatives and superlatives, and demonstrative adjectives and pronouns. At the end of this course, students will be able to: talk about sports, minor illnesses, summer/winter activities, attending concerts/museums, and going shopping. It is the goal in Grade 8 Spanish to prepare students for success in a high school level language course.

## The Role of Band/Chorus in Making Exploratory Selections

Hanover Middle School has a rich history of music education and performance training. As fifth graders enter HMS, they begin to make choices in how they wish to spend their specialist and exploratory time. Instrumental music, band, and chorus all meet during times that allow for students to take a deeper dive into learning and expressing themselves through music.

Grade (s)	Specialist Block	Exploratory Block
5	<ul style="list-style-type: none"><li>➤ <b>Instrumental Music</b> - Students who have signed up for instrument lessons (at the end of 4th grade or fall of 5th grade) will have instruction during the music specialist block. These students will experience other specialists during the other specialist block days in the</li></ul>	<ul style="list-style-type: none"><li>➤ <b>Band</b> - Fifth graders who take instrumental music may be pulled for rehearsals when participating in special occasions such as winter or end of year performances.</li><li>➤ <b>Chorus</b> - All fifth grade students</li></ul>

	schedule.	participate in chorus as a regular part of the Exploratory Learning block rotation.
<b>6 – 8</b>	<p>&gt; <b>Instrumental Music</b> - Students who have signed up for instrument lessons will have instruction during the music specialist block. These students will experience other specialists during the other specialist block days in the schedule.</p>	<p>&gt; <b>Band</b> - Students who wish to participate in band will meet during their Exploratory Learning block. <i>Due to the rehearsal schedule of band, students who elect to do so will not be able to participate in the other exploratory specialists classes.</i></p> <p>&gt; <b>Chorus</b> - Students who wish to participate in chorus will meet during their Exploratory Learning block. <i>Due to the rehearsal schedule of chorus, students who elect to do so will not be able to participate in the other exploratory specialists classes.</i></p>

## Specialist Classes

### Technology

#### Grade 5

##### Technology: Google Suite

This course introduces students to email and the importance of formatting and sending a properly designed email. Students are introduced to the Google Education Suite (Doc's, Sheets, Slides, Drawing) and use the applications to demonstrate understanding, promote online collaboration and creativity. Google applications are utilized throughout middle/high school.

##### Exploratory Technology: Lego – Imagination, Creation, Design

Hands on Lego building projects. Students tap into their creative natural ability to build using fun Legos.

#### Grade 6

##### Technology: Project Based Learning

Sixth Grade technology is centered around student based inquiry learning and problem solving. Students design and build hands on STEM activities. Using Lego's, elastics, magnets, wires and string, student's design Simple Machines including Catapults, Cranes, Draw Bridge, Gears, Magnets and Electrical Circuits. In addition to hands on activities students are actively engaged in online simulation activities that enhance their hands on activities.

##### Exploratory Technology: Collaborative Learning

Collaborative online team based games. Students build relationships with other team

members as they work through problems by discussion, problem solving and analysis. These games allow students to become leaders, team members peacemakers at different times.

## **Grade 7**

### **Technology: Curriculum Integration**

Students in grade seven work on core curriculum projects in addition to introductory Photoshop and HTML. In collaboration with core grade 7 teachers, students work on curriculum infused technology projects. Projects include narrated math videos, language comics, Social Studies timelines, Science animations and Language analysis.

### **Exploratory Technology: Critical Thinking and Learning with Team Games**

Cooperative games allow students to work together to make decisions based on creative thinking, communication, and collaboration. Critical thinking, analysis and discussion of their strategies are naturally embedded in cooperative games. Students understand the importance of teamwork, collaboration, leading, following in a safe friendly gaming environment.

## **Grade 8**

### **Exploratory: Portfolio Design**

This course examines the use of different types of media that are used to create a company. Using Photoshop, students design their own company and media that promotes their company. Media include company logo, letterhead, business card, social media, website and apparel designed using Photoshop. Other topics discussed are the use of color and style and its impact on people and advertising. Work culminates with a presentation portfolio of company media.

## **Engineering Technology**

## **Grade 5**

### **Core Engineering: Applications of Simple to Complex Machines**

This is a computer based engineering course that includes learning and applying the basics of the engineering process through hands on projects. Students will learn how to assemble and test various types of simple and complex devices, record their measurements and analyze the results of various experiments. With the use of computers, students will input experimental data into Microsoft Excel/Google Sheets based on the measurements they have accrued during various experiments. Analysis will be conducted based on graphs, charts and tables formulated by student's experiments. Methods of instructions will include, but not limited to, hands on experiments, research and investigations while

working independently and sometimes in teams of 2 to 4 students. Students may be assessed using a project based grading rubric and/or online computer based pre/post assessment program.

Upon successful completion of this course students should be able to:

1. Understand the applications of various simple and complex devices.
2. Create, track and analyze various experimental data to understand how to maximize the use of each device.
3. Be able assemble, test and adjust various experimental devices based on various specifications.

**Resource(s):**

- Aspire Online Engineering Labs Simple Machine Activities  
<http://aspire.cosmic-ray.org/Labs/Machines/>
- Edheads Online Engineering Labs Compound Machine Activities  
<http://edheads.org/page/SimpleMachines>  
<http://edheads.org/page/oddMachine>

## **Grade 6**

### **Core Engineering: Aeronautics through Glider Systems**

This course focuses on learning the fundamentals of the engineering design process, various stages of a system and applying best engineering practices. The course embeds STEM throughout the research, engineering and testing phases. An emphasis is to ensure students understand why these best practices should be followed in solving engineering related problems. The lessons are aligned with the NGSS 6th grade Engineering standards and uses the computer based applications of Glider and Rockets. Students will be learning and applying intermediate level the engineering design process using various materials and tools to build and test prototypes.

Upon successful completion of this course students should be able to:

1. Understand the process of solving engineering related problems and challenges to ensure successful solution.
2. Design, develop and re-engineer a glider while understanding the properties of flight and how they differ from vehicle to vehicle.
3. Be able assemble, test and adjust various virtual designs of gliders based on various materials and specifications.
4. Apply various stages of best engineering practices related to journalizing lessons learned, logging various accomplishments and reengineering tasks associated with

projects.

**Resource(s):**

- Glider Physical Assembly Kit
- Glider Virtual System – A White Box Learning (WBL) Computer-Based STEM Application:  
<https://www.whiteboxlearning.com/applications/rover>

**Grade 6**

**Exploratory Engineering: Block Programming Through Scratch**

The course focuses on learning the fundamentals of the block programming to develop an online video game. The class enables students to research, develop, test and work in a team programming environment. The projects are focused on Pac-Man and Pong video games. The best practices of coding are utilized such as commenting within the program, debugging methodologies and integration process based on a collaborative team development methodology.

Upon successful completion of this course students should be able to:

1. Understand the process of coding.
2. Identify and utilize various resources through research to complete program.
3. Apply various stages of best coding practices related to journalizing lessons learned, logging various accomplishments and recoding of tasks associated with projects.

**Resource(s):**

- [www.youtube](http://www.youtube)
- <https://scratch.mit.edu>
- IEV – Interactive Educational Video from Blockstars (Lego Robotics team 2015)  
<https://blockstarsiev.weebly.com/>

**Grade 7**

**Core Engineering: Communication Through Robotics**

This course focuses on learning the fundamentals of a communication system and applying through virtual and physical robotics. The course embeds STEM throughout the research, engineering and testing phases. The lessons are aligned with the NGSS Engineering standards and uses the computer based applications of Rover and Cricket robots. Students will be learning and applying intermediate level of the communication and engineering process starting with binary code. The process is focused on the basics of a communications system using computers to develop a source program that is encoded, transmitted and decoded such that the signals received will activate a virtual and physical

robot. The programming of the robots will be done through various computer languages using block based and C-level syntax.

Upon successful completion of this course students should be able to:

1. Understand and apply various stages of a communication system.
2. Develop a program that will enable a virtual and physical robot to traverse various pathways.
3. Apply intermediate level of best engineering practices related to journalizing lessons learned, logging various accomplishments and reengineering tasks associated with their project.

**Resource(s):**

- Cricket Physical Robotic System
- Technology Interactions Binary Code  
<http://www.hanoverschools.org/middle/intlabs/Interactive%20Labs/BINARY%20HTML/binc.htm>
- Rover Virtual Robot System – A White Box Learning (WBL) Computer Based STEM Application  
<https://www.whiteboxlearning.com/applications/rover>

**Grade 7**

**Exploratory Engineering: Architectural Design, Fabrication, and Testing of Structures**

This course focuses on exploring the architectural design techniques, simulation and physical testing of components and structures. The course embeds STEM throughout the research, design, simulation, engineering and testing phases. The lessons are aligned with the NGSS Engineering standards and uses the computer based applications of West Point Bridge and Structure as part of the architectural design phase. Students will be learning and applying beginners level of the architectural design, simulation and engineering analysis of structural integrity. Fabrication of model bridges, houses and other structures will be part of the learning process which supports the re-engineering and design process.

Upon successful completion of this course students should be able to:

1. Show how the components of a structural system work together and function for bridges, houses, buildings and other structures.
2. Provide examples of physical structures and relate their design to their intended use.
3. Use components of a structural system including but not limited to foundation, decking, wall, and roofing.
4. Identify live vs. dead loads and forces of tension, torsion, compression, and shear.

**Resource(s):**

- West Point Bridge Design - Desktop Application
- Structures System – A White Box Learning (WBL) Computer Based STEM Application  
<https://www.whiteboxlearning.com/applications/structures>

**Grade 8****Core Engineering: Design and Development Through Cell Phones and Vehicles**

This course focuses on applying an intermediate level of engineering best practices, minimizing design iterations while making better decisions on trade-offs between engineering and business requirements. The projects are focused on developing a cell phone for Senior citizens and a vehicle that are powered by a mouse trap. The engineering design, development, prototyping and testing processes will be used in both projects. The course embeds STEM throughout the research, engineering and testing phases. The lessons are aligned with the NGSS 8th grade Engineering standards and uses the WBL MTC application. Students will be applying intermediate level of the engineering best practices as a second focus while making better tradeoff decisions between business and engineering requirements.

Upon successful completion of this course students should be able to:

1. Present information that illustrates how a product can be created using basic processes in manufacturing systems.
2. Utilizes best fabrication practices based on forming, separating, conditioning, assembling, finishing, quality control, and safety.
3. Compare the advantages and disadvantages of human vs. computer design and fabrication of these processes.

**Resource(s):**

- Edheads Engineering Online Platform  
<http://edheads.org/page/DesignaCellPhone>
- Mouse Trap Car (MTC) Virtual System – A White Box Learning (WBL) Computer Based STEM Application  
<https://www.whiteboxlearning.com/applications/mousetrap-car>

**Grade 8****Exploratory Engineering: CAD Design and Prototyping**

This course focuses on exploring the Computer Aided Design (CAD) techniques and

simulation of parts and components of vehicles along with picnic tables . The course embeds STEM throughout the research, design, simulation, engineering and testing phases. The lessons are aligned with the NGSS Engineering standards and uses the computer based applications of ProDesktop from PTC and Google Sketchup as part of the CAD design phase. Students will be learning and applying beginners level of the CAD design with some simulation and engineering analysis.

Though no direct prerequisites are identified, students should have basic knowledge of using various Google applications such as Classroom, Slides and Sheets.

Upon successful completion of this course students should be able to:

1. Decide what resources, primary and secondary processes and materials are needed for various components of a structural system that assemble together to construct functional structures.
2. Provide examples of physical structures and relate their design to their intended use.
3. Use components of a structural system including but not limited to foundation, decking, wall, and roofing.
4. Identify live vs. dead loads and forces of tension, torsion, compression, and shear.

**Resource(s):**

- ProDesktop Version 8 - Desktop Application
- Sketchup Version 17 (Maker and Pro) - Desktop Application
- Cricket Physical Robotic System
- Technology Interactions Binary Code  
<http://www.hanoverschools.org/middle/intlabs/Interactive%20Labs/BINARY%20HTML/binc.htm>
- Rover Virtual Robot System – A White Box Learning (WBL) Computer Based STEM Application  
<https://www.whiteboxlearning.com/applications/rover>

## **Digital Literacy**

**Grade 5**

**Exploratory Digital Literacy: Introduction to Internet Research**



This course introduces students to intermediate research skills to create digital artifacts and attribute credit. Students learn strategies to evaluate the reliability and validity of internet resources, and apply these skills to selecting a website resource for a research project. Students also learn strategies to fairly use digital sources, such as paraphrasing and creating citations using digital tools such as [Easybib.com](http://Easybib.com). Web-based applications such as [Google Docs](http://Google Docs) and [Weebly](http://Weebly) website builder are used by students to demonstrate understanding of the above. Students will complete a culminating project in which they create an informational website about a local tourism location which will become part of a larger collection of local tourism information. A collection of sample projects can be viewed by clicking [here](#).

## **Grade 6**

### **Digital Literacy: Digital Literacy and the Fair Use of Ideas**

This course further develops students' ability to engage in responsible use of technology and laws regarding ownership of material/ideas, licensing, and fair use. Students will understand copyright laws related to digital media, and will understand how to search the Internet for media that can be used fairly for educational or personal use. A variety of web-based applications, such as [Screencastify](http://Screencastify), [Google Slides](http://Google Slides), and [WeVideo](http://WeVideo) will be used to accomplish these objectives. Students will also gain a basic understanding of their rights and the rights of popular social media companies in respect to anything that is posted on social media applications such as Instagram, Snapchat, and YouTube. Students will complete culminating projects that demonstrate their knowledge of [copyright and Creative Commons](#) law as well as a [video project](#) in which they use written and visual digital artifacts in a manner that is consistent with copyright law.

## **Grade 7**

### **Digital Literacy: Digital Literacy and Social Media**

Students will gain a deeper understanding of evaluating website sources for credibility and will understand safe, appropriate, and responsible practices when participating in online communities, such as blogs and social networking sites. Issues such as dealing with cyberbullies, privacy, and ownership rights of social media content will be addressed, and students will create and comment on Weebly [blogs](#) that teach viewers about these issues. Students will also create their own animated artwork using Google Drawings and [EZGIF.com](http://EZGIF.com). They will license their artwork using copyright and Creative Commons licensing tools, and will understand what others can legally do with content that they publish on the internet.

## Grade 8

### Digital Literacy: Digital Literacy Applications for High School and Beyond

Students will gain an advanced knowledge of searching the Internet for credible and scholarly resources, and will utilize conventional MLA formatting for in-text citations, direct quotes, images, videos, music, and written content. In addition, students will understand their rights and responsibilities as a social media user and how responsible use affects their future high school, college, and career experiences. Finally, students will develop an advanced understanding of copyright and fair use laws as they relate to several different types of digital media, such as music, videos, and images. Applications such as [Google Slides](#), [WeVideo](#), and [Socrative](#) will be used to accomplish these objectives. Culminating projects include a [school proposal research project](#) that is presented to members of the school community, a [quiz](#) designed to teach others about the effects of social media behavior on future college and career aspirations, and a [video project and presentation](#) that analyzes how to fairly use digital content that is owned by others.

## Music

### Overview

*The HMS Music Department is committed to providing a comprehensive, sequential, collaborative program, offering a variety of performing ensembles and non-performance oriented classes designed to meet the needs of all students at Hanover Middle School. If you have any questions about these courses, please speak with the department teachers.*

### General Music

All General Music classes incorporate the following, with additional units for each grade.

- **Current Arts** - A weekly survey of current events in the Arts
- **Rhythm Write** - Rhythmic Dictation
- **Melody Write** - Melodic Dictation

## Grade 5

**History of Technology** - Students research audio, video and musical technology from the last 100 years

**Music Presentation** - Students create an informational presentation with poster and music

**Marvelous Toy** - Create and describe an original toy based on the song

## Grade 6

**History of Technology** - Students research audio, video and musical technology from the last 100 years

**Music Presentation** - Students create an informational presentation with poster and music

**Singing** - Various popular music tunes

**Creative** - Small groups create and perform an original dramatic video with music

## **Grade 7**

**Miss Saigon** - An overview of the Broadway musical

**Create-A-Song** - Students create and record original songs using Garageband

## **Grade 8**

**Music Presentation** - Students create an informational video using Garageband, iPhoto and iMovie

**Multi-Media** - Students create a video project using GarageBand, iPhoto, and iMovie

## **Performing Ensembles**

### **Grade 5: Band/Instrumental Music**

Starting in 5th grade, students have the opportunity to learn to play a musical instrument and participate in the instrumental music program. Lessons are scheduled during the school day and are open to everyone, no previous experience necessary. Playing an instrument is not only musically rewarding and fun, but a life-long skill. Students will play alone and with others while learning note and rhythm reading, and how to produce the best sound, while working with the band method book and other fun songs. Instruments offered in the first year of the program include: flute, oboe, clarinet, saxophone, French horn, trumpet, trombone, and percussion. Students who elect to learn an instrument will have an instrument lesson in the form of large-group instruction once during every six-day cycle. The instrument lesson replaces a General Music class, but students will still participate in all other Specialist classes and Exploratory courses which includes Music and Chorus. Students will present two in-school concerts, open to friends and family. In their lesson group, students will be introduced to a variety of music apps and websites to assist with their reading, listening, and instrument skills. This course aligns with State and National Standards.

Topics/skills covered include:

- Embouchure and Tone Development
- Introduction to counting, timing, and rhythmic development
- Reading and notation skills
- Simple Music Theory
- Introduction to musical terms and symbols
- Ear training and listening skills
- Equipment care and maintenance
- Effective practice habits

## **Grade 6: Band/Instrumental Music**

The 6th Grade Band is dedicated to the development of individual instrumental technique and introduction to large ensemble skills. This is the first time these young musicians have the opportunity to be in an ensemble, and it is a rewarding experience to lead and contribute within a larger performing group. In the full Band experience, the focus is on ensemble playing, self confidence, commitment, listening skills, and life skills such as discipline, prioritizing, leadership, and teamwork. The 6th Grade Band meets during the Exploratory period, every other day, and each Band student has an instrumental music class as their music course selection that focuses on skill and technique specific to their instrument. In addition to the band method book, concert music selections for each group are chosen based on each ensemble's ability level and instrumentation, including a variety of genres, styles, and historical periods. In their lesson group, students will be introduced to a variety of music apps and websites to assist with their reading, listening, and instrument skills. These classes are more instrument specific and designed to meet the needs of each section. The 6th Grade Band participates in two evening concerts and two in-school concerts each year. This course aligns with State and National Standards.

Topics/skills covered include:

- Embouchure and Tone Development
- Counting, timing, and rhythmic development
- Reading and notation skills, including sight reading
- Introduction of Scales
- Simple Music Theory
- Development of vocabulary of musical terms and symbols
- Ear training and listening skills
- Equipment care and maintenance
- Effective practice habits

## **Grades 7 & 8: Band/Instrumental Music**

The 7th & 8th Grade Bands are dedicated to continuing the development of individual instrumental technique and large ensemble skills. These performance-based ensembles are scheduled to meet separately but are combined to participate in many concerts and activities throughout the year. Ensembles also may participate in the following organizations, performances, and music festivals: Bridgewater State University Middle School Honor Band, MMEA Southeast District Junior Festival, Southeastern Massachusetts School Bandmasters Association (SEMSBA) Junior Festival, 8th Grade Washington D.C. trip performance, and school assembly performances for Spirit Day and Veterans Day. The music department performing groups also participate in performance trips to Providence

Bruins and Six Flags New England. Each grade-level Band meets as their own class during the Exploratory period, every other day, and each Band student has an instrumental music class as their music course selection that focuses on skill and technique specific to their instrument. These classes also use a variety of music apps and websites to assist with their reading, listening, and skill development. In addition to the band method book, concert music selections for each group are chosen based on each ensemble's ability level and instrumentation, including a variety of genres, styles, and historical periods. This course aligns with State and National Standards.

Topics/skills covered include:

- Embouchure and Tone Development
- Counting, timing, and rhythmic development
- Reading and notation skills, including sight reading
- Introduction of Scales
- Simple Music Theory
- Development of an extensive vocabulary of musical terms and symbols
- Ear training and listening skills
- Equipment care and maintenance
- Effective practice habits

## **Grades 6 – 8: Chorus**

Chorus students meet in a friendly, accepting, and engaging environment to experience the joy of singing with others. Building on the skills and knowledge learned in 5th grade, students continue to improve their personal singing abilities, learning how to consistently create beautiful, healthy sound. In addition, students are exposed to a much wider variety of choral literature in unison, two- and three-parts, in multiple styles, and drawn from several cultures. We also begin the process of learning how to read and write musical notation, sing with solfege, and count with takadimi. Most importantly, students learn how to work like a team, and achieve goals that they could not have accomplished by themselves. Over the course of the year, students perform in two concerts, in addition to participation in musical festivals and extracurricular performances with the Hanover High School choirs.

## **Exploratory Music**

### **Grade 5**

#### **Exploratory Chorus**

Students in Exploratory Chorus get to explore the fun of singing in a group of people. Every person can learn how to sing well, because singing is a learned skill! It's just like learning how to ride a bike - once you've learned how to do it, you never forget! In class, students learn the fundamentals of standing and sitting, breathing, and the other components of healthy and beautiful singing. Students then apply their healthy singing to rounds, canons, and songs sung in unison. They play several games that teach more about rhythm and pitch, and which also help improve musicianship skills. By the end of the class, students that work hard are able to sing several songs by themselves and with others, all while modeling proper postural alignment and breathing techniques, and singing with a sense of beauty and expression.

### **Stage Production**

Set design, sound design, lighting design, stage management and everything else behind the scenes.

## **Grade 6**

### **The Broadway Musical**

An overview of Broadway and the Broadway Musical in the last 60 years.

## **Grade 8**

### **Video Production**

Camera Usage, Green Screen, Photoshop, Motion Graphics, iMovie and Premiere Pro are included.

## **Art**

### **Overview**

*Students at Hanover Public Schools question the world, seek visual awareness, value their connection to culture and history, and express themselves with purpose.*

## **Grade 5 Elements of Art: Media & Materials**

The 5th grade visual arts program builds upon the basic skills acquired in elementary school. With a heavy focus on The Elements of Art, 5th graders are challenged to create original art that demonstrates a fundamental understanding of media, materials, and their proper use.

### **Topics Addressed:**

- American Art History and styles from Native American Artists' art to American Modern Artist.
- Use of line & shape to create facial expressions that show emotion.
- Drawing with body language and dynamic poses.
- Appropriate use of layered backgrounds.
- Various styles of drawing and gridding methods.
- Color mixing and painting skills.
- Exhibition of artwork.
- Reflection on the process of art making and the final project.
- Utilization of a variety of modern day art practices.

### **Grade 5 Visual Arts: Cartooning**

This intro level drawing & sculpture course empowers students to create their own unique cartoons (with a focus on facial expressions, body language, and backgrounds that help tell their story) by utilizing the Elements of Art.

### **Grade 5 Visual Arts: Painting our way through American Art History**

After a broad overview of American Art History students will explore drawing and painting skills through an American artist of their choice to deepen their understanding of how the arts fit in with their culture.

### **Exploratory Visual Arts: Intro to Sculpture in the 21st Century**

This intro level course will establish a fundamental understanding of 3D design, sculpture, and 21st century fabrication & manufacturing techniques through the use of 3D printing.

### **Exploratory Visual Arts: Drawing and Painting I – Animal Drawings**

This is a step by step “How to Draw” animals. Each class is devoted to an animal form chosen by the class. First we learn how basic forms can be transformed. Each student then incorporates this into a distinct drawing.

## **Grade 6 – Elements of Art: Observational Techniques & Strategies**

6th grade expands upon students’ understanding and implementation of The Elements of Art. Students will learn observational techniques and strategies to enable them to render from real life. Projects will give students the opportunity to explore ceramics, painting, pencil rendering, and mixed media.

### **Topics Addressed:**

- Art & artmaking techniques from a variety of cultures.
- Color mixing and painting skills.

- Exhibition of artwork in a professional manner.
- Reflection on the process of art making and the final project.
- Creation of artworks that are realistic and abstraction through representation.
- Create well-balanced interesting compositions that demonstrate an understanding of space.
- Responsibly use and care for art materials and the work space.
- Research, pre-plan, problem solve and evaluate their own work.
- Utilization of a variety of modern day art practices.

### **Grade 6 Visual Arts: Realism & Representation**

This course will teach students how to draw from real life, focusing on observational techniques, linear perspective, and figure studies. Students will also explore representational art and the use of symbolism and visual metaphors.

### **Grade 6 Visual Arts: Drawing and Painting II**

Students will expand their 2-D and 3-D skills. Students will explore how everyday objects and common materials become works of art. They will apply criteria to self assess their process and products.

### **Exploratory Visual Arts: Intermediate Sculpture in the 21st Century**

Students will further their understanding of 3D design, sculpture, and 21st century fabrication techniques through the use of additive manufacturing (3D printing).

## **Grade 7 – Elements of Art: Principles of Design**

7th grade artists expand upon their understanding of The Elements of Art while exploring representational and conceptual art. Students will be introduced to the Principles of Design in order to create a more effective and visually engaging composition. Students will learn about activist art that is used to create social change and is made as a form of protest.

### **Topics Addressed:**

- Art & artmaking techniques from a variety of cultures.
- Color mixing and painting skills.
- Exhibition of artwork in a professional manner.
- Reflection on the process of art making and the final project.
- Creation of artworks that are realistic and abstraction through representation.
- Create well-balanced interesting compositions that demonstrate an understanding of space.
- Art that inspires social change.
- Responsibly use and care for art materials and the work space.
- Research, pre-plan, problem solve and evaluate their own work.
- Utilization of a variety of modern day art practices.



### **Grade 7 Visual Arts: The Thoughtful Artist**

Students will explore conceptual art, socially conscious art, the graphic image, and effective visual communications.

### **Grade 7 Visual Arts: Illustration**

Students will conceptualize and generate ideas around themes and emotions. They will organize and refine those ideas and utilize them in their final artwork. We will look at American, French, and Spanish artists, as well as any others that may be appropriate.

### **Exploratory Visual Arts: Advanced Sculpture in the 21st Century**

This advanced level course will refine and deepen students' understanding of 3D design, sculpture, and 21st century fabrication techniques through the use of additive manufacturing (3D printing).

### **Exploratory Visual Arts: Knowledge of Forms**

Students will expand their knowledge of forms through craftsmanship, themes and pride of work.

## **Grade 8 – Communicating Through Elements of Art & Principles of Design**

8th grade students will create 2D and 3D works of art by planning, revising, and reflecting on making personal connections to their art. Students will deepen their understanding of The Principles of Design while employing The Elements of Art in a careful and considerate way to make compositions that are intentional and visually intriguing. Through discussion, reflection and problem solving, students will visually communicate through their art work.

### **Topics Addressed:**

- Connecting with personal traits and incorporating them into art.
- Presenting products that demonstrate a plan, refining ideas, and exploring alternate ways of working with materials
- Students will respond to observations, investigate ways of using 2D and 3D materials.
- Students will use new vocabulary in their reflective statements.
- Differentiation strategies for all learners will be explored.
- Exhibition of artwork in a professional manner.
- Responsibly use and care for art materials and the work space.
- Research, pre-plan, problem solve and evaluate their own work.
- Utilization of a variety of modern day art practices.

### **Grade 8 Visual Arts: Art in the Public Space**

Students will deepen their understanding of The Elements of Art and The Principles of Design through the exploration of public objects of art such as architecture, monuments, memorials, and sculpture.

### **Grade 8 Visual Arts: Sculpture**

The eighth graders will be creating 2D and 3D works of art by planning, revising, and reflecting on making personal connections to their art. Material to be explored may include but not limited to such as wire and clay.

### **Exploratory Visual Arts: Designing with Clay**

Students will work in clay to expand with design concepts

## **Health**

### **Overview**

Health Education at Hanover Middle School is a one-term course, meeting for a total 20 class sessions. Each student participates in a health course in each grade. Additional Health Exploratory courses are offered for all 5th grade students and all 6th and 8th grade students not in Band or Chorus. All Health courses follow the learning standards of the Massachusetts Comprehensive Health Curriculum Frameworks and the National Health Education Standards.

All HMS Health courses aim to improve students' health knowledge, skills, and behaviors in order for them to apply those lessons to their lives outside of Health class. Goal setting, decision making, communication skills, advocacy, and respectful behavior are consistent themes throughout all lessons and grade levels.

### **Grade 5**

#### **Grade 5 Health – Introduction to Comprehensive School Health Education**

- Goal Setting
- Decision Making
- Family
- Relationships
- Violence Prevention
- Body Systems
- Nutrition
- Physical Activity
- Alcohol, Tobacco, and Other Drugs (*over the counter and prescription drugs*)
- Disease Prevention (*focus on proper handwashing*)

- Safety (*safety rules for various settings, school and home escape plans*)
- Environment
- Community Health
- Consumer Health
- Refusal Skills
- Growth and Development (intro to reproductive system and physical/psychological changes of puberty)
  - *This lesson takes place for all 5th graders in the Spring, regardless of when they have Health.*

### **Exploratory Health – Team Building & Communication Skills**

Students work on speaking and listening skills and respectful communication. Team building games and initiatives are used to foster cooperation, problem solving, critical thinking, and social skills.

## **Grade 6**

### **Grade 6 Health – The World Around Us: Safety, Community, & Environment**

- Safety
  - Health Care
  - Safety Rules
  - Rules of the Road
  - Sun Safety
  - Emergency Care
    - First Aid
    - Disaster Preparedness
  - Smoking
- Community
  - Community Health
  - Public Health
  - Health Promotion
  - Violence Prevention/ Bullying Prevention
- Environment
  - Evaluation, Responsibility, and Solutions
  - *Project: Each student will make an improvement to the environment and present that change to the class.*

### **Exploratory Health – Community Health & Communication Skills**

Students work on speaking and listening skills and respectful communication. The PV Legs system will be used to teach specific criteria for getting students more comfortable when

speaking. Students will also participate in a community-building activity depending on the time of year of their course (past examples include - holiday cheer cards to Veterans at the VA Hospital, thank you Valentines to every staff member, planning and promoting Zumbathon for Breast Cancer or Jump Rope for Heart, etc.)

## **Grade 7**

### **Grade 7 Health – Personal Wellness: The Human Body**

- Body Systems
  - Form and function
  - Puberty
- Nutrition and Physical Activity
  - Nutrients
  - Nutrition Labels
  - Energy Balance
  - Physical Activity
  - Fitness
  - Project: Each student will either make and serve a healthy food/drink to the class (researching the health of the food) OR teach an exercise to the class (researching proper technique and benefits of the exercise).
- Communicable and Chronic Disease Prevention
- Sleep
- Alcohol

## **Grade 8**

### **Grade 8 Health – Respectful Relationships**

- Character
- Self-Esteem
- Listening Skills
- Assertive Behavior
- Peer Pressure
- Depression/ Suicide Prevention
- Drug Abuse Prevention
- Reproduction/Sexuality
  - Anatomy
  - Abstinence
  - Prevention/ Consequences
  - Healthy Relationships
- Legal/Moral/Ethical Considerations

- Support Systems
  - Project: Each student will talk with each member of the class to learn about him/her and present their findings to the class.

### **Exploratory Health – Current Issues in Health, Health Advocacy, & Communication Skills**

Students work on speaking and listening skills and respectful communication. Students will examine the impact of current health issues on their own lives and communities (examples include learning and practicing stress management techniques, studying disparities among populations of the world, the impact of device use on society and themselves, health promotion through school bulletin boards/announcements/events, developing lessons for younger students, etc.)

## **Physical Education**

### **Overview**

Physical education classes at Hanover Middle School are conducted once in a 6-day cycle for students grades 5-8. The major goal of the program is to develop a lifelong habit of being active focusing on cognitive, social, and physical development as required by the Massachusetts Curriculum Frameworks for Health and Wellness.

Based on these frameworks the physical education program is designed to...

- help students develop concepts of body and spatial awareness
- acquire and refine a variety of manipulative
- locomotor, and non-locomotor movement skills
- develop competence in specific movements and forms
- demonstrate strategies, teamwork, and fair play in sports and in cooperative games
- design and maintain personal fitness
- understand and value the benefits of regular physical activity
- link movement activities with opportunities for self expression
- develop an appreciation of a physically active lifestyle

We at Hanover Middle School stress active and respectful participation in a competitive and non-competitive atmosphere. This allows each student to achieve personal success. Over the four year period, students participate in a wide variety of instructional units that address the above mentioned frameworks.

## **Activities By Term**

### **Term 1**

- Fitness Testing, Soccer, Lacrosse, Capture the Flag, Gymnastics

## **Term 2**

- Gymnastics, Team Handball, Hockey, Volleyball, Fitness Poker

## **Term 3**

- Jump Rope/Hoops for Heart, Cooperative Games, Home Run Derby, Fitness Testing, Archery (6-8), Ultimate Frisbee, and Lawn Games

## **Grade 5**

### **Grade 5 Physical Education**

The goal for grade 5 is to continue to develop skills with modified game play.

#### **Exploratory Physical Education**

Introduction to fitness. Students learn how to use the strength and cardio machines/equipment in the fitness room. Instruction is focused on safety, appropriate use, and purpose of machines/equipment.

## **Grade 6**

### **Grade 6 Physical Education**

The goal for grade 6 is to continue skill development, introduce rules to play a competitive game.

#### **Exploratory Physical Education**

Review of grade 5 introduction to fitness. Instruction is focused on advanced skill progression with continued use of machines/equipment in fitness room.

## **Grade 7**

### **Grade 7 Physical Education**

The goal for grade 7 is competitive game play, adding offensive and defensive strategies. Progressing towards mastery of skills.

#### **Exploratory Physical Education**

Competitive team game play

## **Grade 8**

### **Grade 8 Physical Education**

The goal for grade 8 is mastery of skills and developing independence in a competitive game setting.

### **Exploratory Physical Education**

Competitive team game play