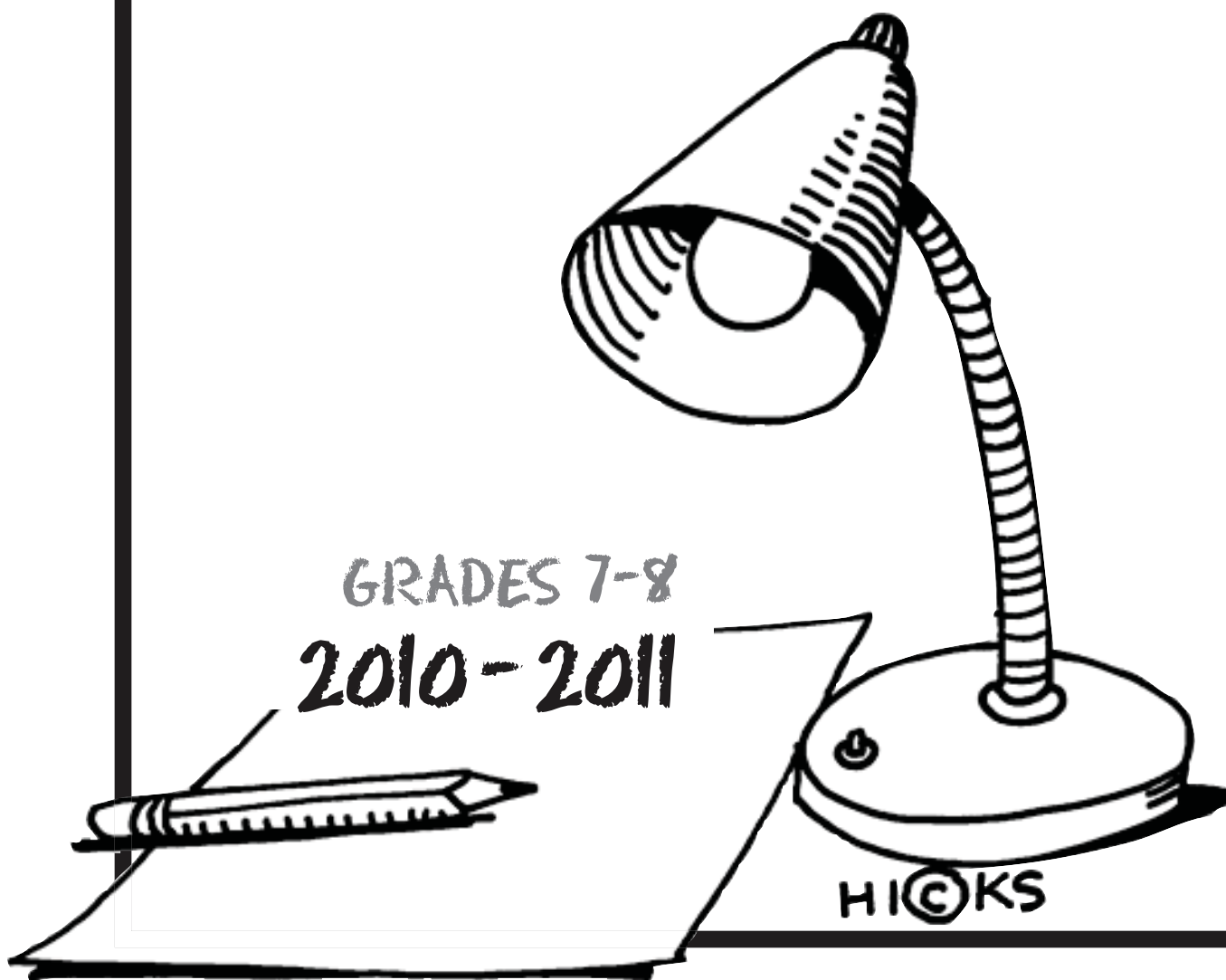


# JUNIOR HIGH SCHOOL DISTRICT SYLLABI / COURSE HANDBOOK

*Van Wyck Junior High School  
Wappingers Junior High School*



GRADES 7-8  
2010-2011

## SCIENCE 7

Code S141 Full Year

Prerequisite: None

### Areas of Study Include:

- **Introduction to Life Science**
  - Laboratory Protocols
  - Graphing
  - Scientific Method
  - Metric System
- **Characteristics of Living Things**
- **Microscope**
- **Cells**
  - Structure and Function
  - Cell Theory
  - Cell Processes
  - Cell Reproduction
- **Viruses**
- **Classification**
  - Dichotomous Keys
  - Kingdoms
  - Bacteria and Fungi
  - Protist and Pond Life
  - Plant and Photosynthesis
  - Animal Kingdom
  - Vertebrate vs. Invertebrate
  - Sponges and Cnidarians
  - Flatworms, Roundworms, and Segmented Worms
  - Mollusks and Arthropods
  - Echinoderms
  - Fish, Amphibians, and Reptiles
  - Birds and Mammals
- **Human Body Organization**
  - Skeletal and Muscular System
  - Digestive System
  - Circulatory System
  - Respiratory and Excretory System
  - Nervous and Endocrine System
  - Reproductive System
  - Immune System
- **Reproduction and Development**
- **Genetics**
  - Heredity
  - DNA
- **Adaptations Over Time**
- **Ecology**

Assessment: All students do the following for their final assessment  
Projects, Lab Exam and Content Exam

For the complete NYS Core Curriculum for Intermediate Living  
Environment, see:

<http://www.emsc Pages 12-20>

## SCIENCE 7 HONORS

Code S161 Full Year

Prerequisite: Placement in the Honors program is by application. The selection process takes place at the end of the first semester of grade 6. Science and Mathematics are blocked for teaming purposes.

In order to qualify for Science honors, students must meet the criteria and be accepted for **both** the Science Honors and Mathematics Honors programs.

Note: The junior high school Honors program is rigorous and demanding. Students are expected to meet and maintain high standards of performance in Honors courses. The program is comprehensive in scope and sequence and accelerated in pace of instruction.

Science Honors is an accelerated study of science. Seventh grade honors combines two years of science (Science 7 & 8) into one year of Science 7H.

Science 7 Honors is for students who have excelled and demonstrated a firm grasp of concept and skills in sixth grade science and mathematics, have at least a 93 average in each course, have the teachers' recommendation and who meet the district criteria on standardized tests. The students must display a high degree of interest in science and math, be motivated and self directed, easily understand new concepts and principles, and demonstrate a high level of problem-solving skills.

Students who do not meet the above criteria at anytime during the school year will be reviewed for possible removal from the Honors program.

### Areas of Study Include:

#### LIFE SCIENCE

- **Introduction to Life Science**
  - Laboratory Protocols
  - Graphing
  - Scientific Method
  - Metric System
- **Characteristics of Living Things**
- **Microscope**
- **Cells**
  - Structure and Function
  - Cell Theory
  - Cell Processes
  - Cell Reproduction
- **Viruses**
- **Classification**
  - Dichotomous Keys
  - Kingdoms
  - Bacteria and Fungi
  - Protist and Pond Life
  - Plant and Photosynthesis
  - Animal Kingdom



- **Human Body Organization**
  - Skeletal and Muscular System
  - Digestive System
  - Circulatory System
  - Respiratory and Excretory System
  - Nervous and Endocrine System
  - Reproductive System
  - Immune System
- **Reproduction and Development**
- **Genetics**
  - Heredity
  - DNA

## PHYSICAL SCIENCE

- **General Properties of Matter**
  - Mass and Weight
  - Volume and Density
- **Physical and Chemical Changes**
  - Phases of Matter and Phase Changes
  - Chemical Properties and Changes
- **Classes of Matter**
  - Elements, Compounds and Mixtures
- **Atoms**
  - Atomic Theory
  - Atomic Structure
- **Periodic Table**
  - History and Design
  - Trends and Patterns
- **Atomic Bonding**
  - Ionic, Covalent and Metallic
- **Chemical Reactions**
  - Chemical Equations
  - Types of Reactions
- **Physics of Motion**
  - Newton's Laws of Motion
- **Physics of Energy**
  - Energy forms and changes

Assessment: All students do the following for their final assessment Projects, Lab Exams, 2 Content Exams- Life Science and Physical Science

For the complete NYS Core Curriculum for Intermediate Living Environment, see:  
<http://www.emsc> Pages 12-28

## SCIENCE 8

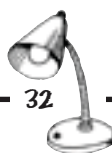
Code S241 Full Year

Prerequisite: Completion of Science 7.

### Areas of Study Include:

- **Measurement, Safety, Scientific Tools**
- **Observation Skills, & the Scientific Method**
- **Metric System**
- **Graphing**
- **Mass, Volume, and Density**
- **Motion**
  - Motion/Speed/Velocity/Graphing/Acceleration
  - Plate Tectonics
  - Forces & Friction
  - Laws of Motion & Gravity
  - Conservation of Matter/Energy

- **Energy**
  - Potential vs. Kinetic
  - Work & Conservation of Energy
  - Simple Machines & Efficiency
- **Earth-Moon-Sun System**
  - Size/Shape/Latitude & Longitude
  - Isolines/Contour Maps
  - Magnetic Field & Earth's orbit (Newton's Laws)
- **Time & Seasons**
- **Earth's Moon**
  - Tides, Phases of Moon, & Eclipses
  - Moon's Surface & History
- **Solar System**
  - Geocentric vs. Heliocentric Models
  - Sizes (Astronomical Unit)
  - Terrestrial vs. Jovian Planets
  - Origin of Solar System
- **Heat, Phases of Matter, Phase Changes & Heat Transfer**
- **Waves**
  - Types of Waves
  - Parts of a wave, Amplitude, Frequency & Wave length
  - Behavior of Waves
  - Reflection/Refraction/Diffraction
  - Resonance
- **Sound & Light**
  - Sound waves/Intensity & Loudness
  - Pitch & Frequency
  - Light – Reflection vs. Refraction
  - Mirrors, Lenses, & the Eye
  - Light & Color
- **Earth's Internal Processes**
  - Continental Drift & Plate Tectonics
  - Folding & Faulting
  - Earthquakes
  - Interior of Earth
  - Volcanoes
- **Electricity**
- **Magnetism**
- **Electromagnetic Radiation**
- **Renewable vs. Nonrenewable Energy Sources**
- **Weather & Climate**
  - Atmosphere
  - Elements of weather & instruments
  - Weather Maps
  - Air Masses & Fronts/Storms
  - Greenhouse Effect/Global Warming
  - Ozone Problem
  - Factors effecting climate
- **Classification of Matter (Element, Compounds, Mixtures)**
- **Properties of Matter (Physical vs. Chemical)**
- **Atoms, Atomic Structure & the Periodic Table**
- **Minerals & Rocks**
- **Earth's Changing Surface**
  - Weathering & Soil
  - Erosion/Deposition
  - Mass Wasting, Running Water, Glaciers, Wind, Waves
  - Ground Water
  - Geologic Time
- **Interactions of Matter**
- **Chemical Reactions**



- **Reaction Rates & Energy**
- **Solutions, Acids & Bases**
- **Nuclear Changes**
  - Radioactivity (Definition & use in medicine)
  - Radioactive dating
  - Nuclear Reactions (& Atomic Bomb)
- **Stars & Galaxies**
  - Observing the universe
  - Evolution of stars
  - Cosmology
  - Big Bang & Expansion of Universe
- **Skills for Grade 9**
  - Graphing
  - Analysis of Charts
  - Making Inferences
  - Reference Table
  - Drawing Conclusions

Assessment: All students take the New York State Grade 8 Science Test. This assessment is made up of four parts (A, B, C, D). These include a hands-on lab practical and a content-based written test. This test will count as their final exam grade.

See <http://www.emsc.nysed.gov/mst/pub/intersci.pdf> Page 29  
For the complete NYS Core Curriculum for Intermediate Physical Setting, see:  
<http://www.emsc.nysed.gov/mst/pub/intersci.pdf> Pages 21-28

## THE PHYSICAL SETTING EARTH SCIENCE

**Code S361 Full Year 1 credit Rank weight 1.04**

Prerequisite: Completion of Science 7 Honors at the mastery level.

Note: Earth Science students will take the NYS Earths Science Regents Examination in June. This Regent exam will be the final examination for the course.

The junior high school Honors program is rigorous and demanding. Students are expected to meet and maintain high standards of performance in Honors courses. The program is comprehensive in scope and sequence and accelerated in pace of instruction.

Science Honors is an accelerated study of Science. Students apply for entrance and are accepted to the program prior to entering 7th grade. At that time they must meet the entrance criteria for both mathematics honors and science honors. However, these programs are not linked at the 8th grade level and so students may be enrolled either one or both programs.

In the eighth grade science honors course, students study science topics at an advanced level in preparation for the NYS Earth Science Regents Examination. Successful completion of this course earns students one high school credit.

Students who are not meeting the criteria at any time during the school year will be reviewed for possible removal from the Honors program.

Entry to the Science Honors program in grades other than 7th grade is under special circumstances only and may require summer study. Parents should contact the District Coordinator for Science and Technology for further information.

## Areas of Study Include:

- **Planet Earth**
  - Shape of the Earth
  - Structure of Earth
  - Locating Positions on Earth
  - Latitude/Longitude
  - Drawing isolines, topographic maps, gradient and profiles
  - Terrestrial Navigation – Polaris Minerals, Rocks and Resources
  - Define and identify minerals using minerals physical properties
  - Identify and classify rocks
  - Understand and utilize rock cycle
  - Recognize renewable and non-renewable resources and understand their use and management
- **The Dynamic Crust**
  - Locate plate boundaries, earthquake zones, volcanoes and mountain chains
  - Analyze P and S wave arrival time data to locate epicenters and determine origin times
  - Describe the internal structure of the earth
  - Recognize evidences of continental drift, plate tectonics, seafloor spreading, and crustal movement
  - Understand the driving force of plate tectonics
  - Understand the different types of plate boundaries
  - Earthquake and volcano preparedness
- **Weathering, Erosion, Deposition and Landscapes**
  - Distinguish between two types of weathering, the conditions under which they occur and describe examples of each
  - Factors that affect rate of weathering, deposition and erosion
  - Formation and conservation of soils
  - Difference between transported and residual soils
  - Compare the agents of erosions and their effects on the Earth's surface
  - NYS erosional history and development of landscape features
  - Glaciers and coastal features
- **Interpreting Earth's History**
  - Reconstructing geologic past using principal of uniformitarianism, superposition, correlation, original horizontality, cross cutting relationships, unconformities and fossil evidence (index fossils)
  - Geologic time scale
  - Evolution of life
  - Relative and Absolute dating
  - Radioactive Dating
  - Origin and change of the atmosphere
- **Properties of the Atmosphere**
  - Structure of the atmosphere
  - Air pressure and factors that affects it
  - Humidity and factors that affect it
  - Relative humidity and Dew point
  - Wind and factors that affect it
  - Sea breeze and Land breeze
  - Jet Stream and Coriolis Effect
  - Formation of clouds and types of precipitation
  - Relator of weather variables
- **Weather Systems**
  - Energy in the atmosphere
  - Plot and interpret station models
  - Air masses
  - High and low pressure and weather associated with each
  - Identify, explain and forecast major weather systems using weather maps



- Compare and contrast severe weather storms: Tornadoes, Hurricanes and Thunderstorms
- Severe weather preparedness
- **The Water Cycle and Climates**
  - Hydrologic cycle
  - Explain the relationship of porosity, permeability, and capillarity to ground water
  - Factors that affect storage and movement of groundwater
  - Watersheds, and how they are used and affected by people
  - How heat energy travels: conduction, convection and radiation
  - Angle, reflection and duration of insulation and how they are affected
  - Greenhouse effect
  - Climates and factors that affect climate
- **The Earth in Space**
  - Motions of celestial objects
  - Heliocentric and Geocentric models
  - Apparent motions of the sun
  - Reason for the seasons
  - Latitude and angle of the sun
  - Duration of daylight
- **Beyond Planet Earth**
  - Phases of the moon
  - Eclipses of the moon and sun
  - Angular diameter of celestial objects
  - Tides
  - Geometry of orbits
  - Gravitational forces
  - Solar System data and evolution of stars
  - Evolution of the solar system: red shift and blue shift
  - Asteroids, Meteors, and Comets
- **Environmental Awareness**
  - Technology affects on the environment
  - Pollution
  - Managing resources

Assessment: All Earth Science students who complete the required 1200 minutes of labs with satisfactory laboratory reports on file will take the two part Physical Setting Earth Science Regents Exam in June.

For the complete NYS Core Curriculum for Physical Setting/Earth Science, see:

<http://www.emscd.gov/ciai/pub/earthsci.pdf>

