

APPENDIX: SCIENCE STANDARDS

In accompaniment to the *Sloan Science & Film Teacher's Guide*, here is an appendix of standards in the sciences. Our goal is to help teachers by correlating each film in the Teacher's Guide to National Standards, New York State Standards, and New York City Science Scope and Sequence for K-12.

NEW YORK CITY (NYC) SCIENCE SCOPE AND SEQUENCE:

Standard 1 – Analysis, Inquiry and Design

Standard 2 – Information Systems

Standard 3 – Mathematics

Standard 4 – Science

Standard 5 – Technology Education

Standard 6 – Interconnectedness: Common Themes

Standard 7 – Interdisciplinary Problem Solving

Grades K-5 (click here)

Grade K: Unit 1 Trees through the Seasons, Unit 2 Exploring Properties, Unit 3 Animals

Grade 1: Unit 1 Animal Diversity, Unit 2 Properties of Matter, Unit 3 Weather and Seasons

Grade 2: Unit 1 Earth Materials, Unit 2 Forces and Motion, Unit 3 Plant Diversity

Grade 3: Unit 1 Matter, Unit 2 Energy, Unit 3 Simple Machines, Unit 4 Plant and Animal Adaptation

Grade 4: Unit 1 Animals and Plants in their Environments, Unit 2 Electricity and Magnetism, Unit 3 Properties of Water, Unit 4 Interactions of Air Water and Land

Grade 5: Unit 1 The Nature of Science, Unit 2 Changes in the Surface of the Planet, Unit 3 Food and Nutrition, Unit 4 Exploring Ecosystems

Grades 6-8 (click here)

Grade 6: Unit 1 Energy and Simple Machines, Unit 2 Weather and Atmosphere, Unit 3 Diversity of Life, Unit 4 Interdependence, Unit 5 Geology

Grade 7: Unit 1 Geology, Unit 2 Energy and Matter, Unit 3 The Human Animal, Unit 4 Other Organisms

Grade 8: Unit 1 Reproduction, Heredity and Evolution, Unit 2 Forces and Motion on Earth, Unit 3 The Sun Earth and Moon System, Unit 4 Need and Tradeoffs

Grades 9-12 (click here)

LE | Living Environment

- Unit 1 Scientific Inquiry
- Unit 2 Ecology
- Unit 3 Organization and Patterns in Life
- Unit 4 Homeostasis and Immunity
- Unit 5 Reproduction and Development
- Unit 6 Genetics and Biotechnology
- Unit 7 Evolution
- Unit 8 Human Influences on the Environment

ES | Earth Science

- Unit 1 Maps and Measurement
- Unit 2 Dynamic Earth
- Unit 3 Rocks and Minerals
- Unit 4 Landscapes
- Unit 5 Earth History
- Unit 6 Insolation
- Unit 7 Meteorology
- Unit 8 Climate
- Unit 9 Astronomy

CH | Chemistry

- Unit 1 The Physical Nature of Matter
- Unit 2 Atomic Concepts
- Unit 3 Nuclear Chemistry
- Unit 4 Chemical Bonding
- Unit 5 Periodicity
- Unit 6 Moles/Stoichiometry
- Unit 7 Kinetics and Equilibrium
- Unit 8 Acids and Bases
- Unit 9 Oxidation and Reduction
- Unit 10 Carbon and Organic Chemistry

PH | Physics

- Unit 1 Measurement and Mathematics through Kinematics
- Unit 2 Mechanics
- Unit 3 Energy
- Unit 4 Electricity and Magnetism
- Unit 5 Waves
- Unit 6 Modern Physics

NEW YORK STATE STANDARDS:

Elementary Level Science, Core Curriculum Grades K-4 (click here)

Standard 1: Analysis, Inquiry, and Design

Standard 4: The Physical Setting

Standard 4: The Living Environment

Intermediate Level Science, Core Curriculum Grades 5-8 (click here)

Standards 1, 2, 6, and 7: Expanded Process Skills

-Chemistry, Physics

Standard 4: The Living Environment

-Physical Setting/Earth Science: Geology, Astronomy, Meteorology

Standard 4: The Physical Setting

-Chemistry, Physics

NATIONAL EDUCATION STANDARDS:

Science as Inquiry: Content Standard A

Physical Science: Content Standard B

Life Science: Content Standard C

Earth and Space Science: Content Standard D

Science and Technology: Content Standard E

Science in Personal and Social Perspectives: Content Standard F

History and Nature of Science: Content Standard G

Grades K-4 (click here)

Science as Inquiry: Content Standard A

Physical Science: Content Standard B

- Properties of objects and materials
- Position and motion of objects
- Light, heat, electricity, and magnetism

Life Science: Content Standard C

- The characteristics of organisms
- Life cycles of organisms
- Organisms and environments

Earth and Space Science: Content Standard D

- Properties of earth materials
- Objects in the sky
- Changes in earth and sky

Science and Technology: Content Standard E

- Abilities of technological design
- Understanding about science and technology
- Abilities to distinguish between natural objects and objects made by humans

Science in Personal and Social

Perspectives: Content Standard F

- Personal health
- Characteristics and changes in populations
- Types of resources
- Changes in environments
- Science and technology in local challenges

History and Nature of Science:

- Content Standard G
- Science as a human endeavor

Grades 5-8 (click here)

Science as Inquiry: Content Standard A

Physical Science: Content Standard B

- Properties and changes of properties in matter
- Motions and forces
- Transfer of energy

Life Science: Content Standard C

- Structure and function in living systems
- Reproduction and heredity
- Regulation and behavior
- Populations and ecosystems
- Diversity and adaptations of organisms

Earth and Space Science: Content Standard D

- Structure of the earth system
- Earth's history
- Earth in the solar system

Science and Technology: Content Standard E

- Abilities of technological design
- Understandings about science and technology

Science in Personal and Social

Perspectives: Content Standard F

- Personal health
- Populations, resources, and environments
- Natural hazards
- Risks and benefits
- Science and technology in society

History and Nature of Science:

- Content Standard G
- Science as a human endeavor
- Nature of science
- History of science

Grades 9-12 (click here)

Science as Inquiry: Content Standard A

Physical Science: Content Standard B

- Structure of atoms
- Structure and properties of matter
- Chemical reactions
- Motions and forces
- Conservation of energy and increase in disorder
- Interactions of energy and matter

Life Science: Content Standard C

- The cell
- Molecular basis of heredity
- Biological evolution
- Interdependence of organisms
- Matter, energy, and organization in living systems
- Behavior of organisms

Earth and Space Science: Content Standard D

- Energy in the earth system
- Geochemical cycles
- Origin and evolution of the earth system
- Origin and evolution of the universe

Science and Technology: Content Standard E

- Abilities of technological design
- Understandings about science and technology

Science in Personal and Social

Perspectives: Content Standard F

- Personal and community health
- Population growth
- Natural resources
- Environmental quality
- Natural and human-induced hazards
- Science and technology in local, national, and global challenges

History and Nature of Science:

- Content Standard G
- Science as a human endeavor
- Nature of scientific knowledge
- Historical perspectives