

The following is a rough correlation between the River City Curriculum and the NYS Standards MST 1, 2, 4, 6, and 7 for the Intermediate Level (5-8), as well as the Intermediate Health Education Standards.

MST

STANDARD 1 - Analysis, Inquiry, and Design

Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

SCIENTIFIC INQUIRY - Key Idea 1:

The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.

- S1.1 Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations.
 - S1.1a formulate questions about natural phenomena
 - S1.1b identify appropriate references to investigate a question
 - S1.1c refine and clarify questions so that they are subject to scientific investigation
- S1.2 Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.
 - S1.2a independently formulate a hypothesis
 - S1.2b propose a model of a natural phenomenon
 - S1.2c differentiate among observations, inferences, predictions, and explanations
- S1.3 Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.
- S1.4 Seek to clarify, to assess critically, and to reconcile with their own thinking the ideas presented by others, including peers, teachers, authors, and scientists.

SCIENTIFIC INQUIRY - Key Idea 2:

Beyond the use of reasoning and consensus, scientific inquiry proposed explanations involving the use of conventional techniques usually requiring considerable ingenuity.

- S2.1 Use conventional techniques and those of their own observations and refine their explanations, guided by a need
 - S2.1a demonstrate appropriate safety techniques
 - S2.1b conduct an experiment designed by others
 - S2.1c design and conduct an experiment to test a
 - S2.1d use appropriate tools and conventional techniques about the natural world, including:
 - measuring
 - observing
 - describing
 - classifying
 - sequencing
- S2.2 Develop, present, and defend formal research proposals explanations of common phenomena, including ways observations and ways of conducting simple controlled experiments.
 - S2.2a include appropriate safety procedures

- S2.2b design scientific investigations (e.g., observing, comparing; collecting samples; seeking more information, experiment; discovering new objects or phenomena;
- S2.2c design a simple controlled experiment
- S2.2d identify independent variables (manipulated), (responding), and constants in a simple controlled
- S2.2e choose appropriate sample size and number
- S2.3 Carry out their research proposals, recording observations (e.g., lab notes, audiotape, computer disk, videotape)
 - S2.3a use appropriate safety procedures
 - S2.3b conduct a scientific investigation
 - S2.3c collect quantitative and qualitative data

SCIENTIFIC INQUIRY - Key Idea 3:

The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.

- S3.1 Design charts, tables, graphs, and other representations of observations in conventional and creative ways to help them address their research question or hypothesis.
 - S3.1a organize results, using appropriate graphs, diagrams, data tables, and other models to show relationships
 - S3.1b generate and use scales, create legends, and appropriately label axes
- S3.2 Interpret the organized data to answer the research question or hypothesis and to gain insight into the problem.
 - S3.2a accurately describe the procedures used and the data gathered
 - S3.2b identify sources of error and the limitations of data collected
 - S3.2c evaluate the original hypothesis in light of the data
 - S3.2d formulate and defend explanations and conclusions as they relate to scientific phenomena
 - S3.2e form and defend a logical argument about cause-and-effect relationships in an investigation
 - S3.2f make predictions based on experimental data
 - S3.2g suggest improvements and recommendations for further studying
 - S3.2h use and interpret graphs and data tables
- S3.3 Modify their personal understanding of phenomena based on evaluation of their hypothesis.

STANDARD 1 - Analysis, Inquiry, and Design

Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

Engineering Design - Key Idea 1:

Engineering design is an iterative process involving modeling and optimization (finding the best solution within given constraints); this process is used to develop technological solutions to problems within given constraints.

- T1.1 Identify needs and opportunities for technical solutions from an investigation of situations of general or social interest.
 - T1.1a identify a scientific or human need that is subject to a technological solution which applies scientific principles

- T1.2 Locate and utilize a range of printed, electronic, and human information resources to obtain ideas.
 - T1.2a use all available information systems for a preliminary search that addresses the need
- T1.3 Consider constraints and generate several ideas for alternative solutions, using group and individual ideation techniques (group discussion, brainstorming, forced connections, role play); defer judgment until a number of ideas have been generated; evaluate (critique) ideas; and explain why the chosen solution is optimal.
 - T1.3a generate ideas for alternative solutions
 - T1.3b evaluate alternatives based on the constraints of design
- T1.4 Develop plans, including drawings with measurements and details of construction, and construct a model of the solution, exhibiting a degree of craftsmanship.
 - T1.4a design and construct a model of the product or process
 - T1.4b construct a model of the product or process
- T1.5 In a group setting, test their solution against design specifications, present and evaluate results, describe how the solution might have been modified for different or better results, and discuss trade-offs that might have to be made.
 - T1.5a test a design
 - T1.5b evaluate a design

STANDARD 2—Information Systems

Students will access, generate, process, and transfer information, using appropriate technologies.

Key Idea 1:

Information technology is used to retrieve, process, and communicate information as a tool to enhance learning.

- 1.1 Use a range of equipment and software to integrate several forms of information in order to create good-quality audio, video, graphic, and text-based presentations.
- 1.2 Use spreadsheets and database software to collect, process, display, and analyze information. Students access needed information from electronic databases and on-line telecommunication services.
- 1.3 Systematically obtain accurate and relevant information pertaining to a particular topic from a range of sources, including local and national media, libraries, museums, governmental agencies, industries, and individuals.
- 1.4 Collect data from probes to measure events and phenomena.
 - 1.4a collect the data, using the appropriate, available tool
 - 1.4b organize the data
 - 1.4c use the collected data to communicate a scientific concept
- 1.5 Use simple modeling programs to make predictions.

Key Idea 3:

Information technology can have positive and negative impacts on society, depending upon how it is used.

- 3.1 Use graphical, statistical, and presentation software to present projects to fellow classmates.

Standard 4 – Science

Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

Living Environment

Key Idea 7:

Human decisions and activities have had a profound impact on the physical and living environment.

- 7.1 Describe how living things, including humans, depend upon the living and nonliving environment for their survival.
 - Major Understandings:
 - 7.1a A population consists of all individuals of a species that are found together at a given place and time. Populations living in one place form a community. The community and the physical factors with which it interacts compose an ecosystem.
 - 7.1b Given adequate resources and no disease or predators, populations (including humans) increase. Lack of resources, habitat destruction, and other factors such as predation and climate limit the growth of certain populations in the ecosystem.
 - 7.1c In all environments, organisms interact with one another in many ways. Relationships among organisms may be competitive, harmful, or beneficial. Some species have adapted to be dependent upon each other with the result that neither could survive without the other.
 - 7.1d Some microorganisms are essential to the survival of other living things.
 - 7.1e The environment may contain dangerous levels of substances (pollutants) that are harmful to organisms. Therefore, the good health of environments and individuals requires the monitoring of soil, air, and water, and taking steps to keep them safe.

- 7.2 Describe the effects of environmental changes on humans and other populations.
 - Major Understandings:
 - 7.2a In ecosystems, balance is the result of interactions between community members and their environment.
 - 7.2b The environment may be altered through the activities of organisms. Alterations are sometimes abrupt. Some species may replace others over time, resulting in longterm gradual changes (ecological succession).
 - 7.2c Overpopulation by any species impacts the environment due to the increased use of resources. Human activities can bring about environmental degradation through resource acquisition, urban growth, land-use decisions, waste disposal, etc.
 - 7.2d Since the Industrial Revolution, human activities have resulted in major pollution of air, water, and soil. Pollution has cumulative ecological effects such as acid rain, global warming, or ozone depletion. The survival of living things on our planet depends on the conservation and protection of Earth's resources.

Standard 5 - Technology

Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.

History and Evolution of Technology

Key Idea 5:

Technology has been the driving force in the evolution of society from an agricultural to an industrial to an information base.

5B: Students understand the contributions of people of different genders, races, and ethnic groups to technological development.

STANDARD 6 - Interconnectedness: Common Themes

PATTERNS OF CHANGE: Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.

Key Idea 5:

Identifying patterns of change is necessary for making predictions about future behavior and conditions.

- 5.1 Use simple linear equations to represent how a parameter changes with time.
- 5.2 Observe patterns of change in trends or cycles and make predictions on what might happen in the future.

STANDARD 7 – Interdisciplinary Problem Solving

CONNECTIONS: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

Key Idea 1:

The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.

- 1.1 Analyze science/technology/society problems and issues at the local level and plan and carry out a remedial course of action.
- 1.2 Make informed consumer decisions by seeking answers to appropriate questions about products, services, and systems; determining the cost/benefit and risk/benefit tradeoffs; and applying this knowledge to a potential purchase.
- 1.3 Design solutions to real-world problems of general social interest related to home, school, or community using scientific experimentation to inform the solution and applying mathematical concepts and reasoning to assist in developing a solution.
- 1.4 Describe and explain phenomena by designing and conducting investigations involving systematic observations, accurate measurements, and the identification and control of variables; by inquiring into relevant mathematical ideas; and by using mathematical and technological tools and procedures to assist in the investigation.

Key Idea 2:

Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.

- 2.1 Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to:
 - **Working Effectively:** Contributing to the work of a brainstorming group, laboratory partnership, cooperative learning group, or project team; planning procedures; identify and managing responsibilities of team members; and staying on task, whether working alone or as part of a group.
 - **Gathering and Processing Information:** Accessing information from printed media, electronic data bases, and community resources and using the information to develop a definition of the problem and to research possible solutions.

- **Generating and Analyzing Ideas:** Developing ideas for proposed solutions, investigating ideas, collecting data, and showing relationships and patterns in the data.
- **Common Themes:** Observing examples of common unifying themes, applying them to the problem, and using them to better understand the dimensions of the problem.
- **Realizing Ideas:** Constructing components or models, arriving at a solution, and evaluating the result.
- **Presenting Results:** Using a variety of media to present the solution and to communicate the results.

Learning Standards for Health, PE, and Family & Consumer Sciences

Standard 2: A Safe and Healthy Environment

Students will acquire the knowledge and ability necessary to create and maintain a safe and healthy environment.

Health Education - Key Idea 1:

Students will demonstrate personally and socially responsible behaviors. They will care for and respect themselves and others. They will recognize threats to the environment and offer appropriate strategies to minimize them.

- 1.1: Students assess potentially dangerous situations and demonstrate the skills to avoid or reduce their risk.
- 1.2: Students demonstrate personal and social skills which enhance personal health and safety.
- 1.3: Students understand the need for personal involvement in improving the environment.

Standard 3: Resource Management

Students will understand and be able to manage their personal and community resources.

Health Education - Key Idea 1:

Students will understand the influence of culture, media, and technology in making decisions about personal and community health issues. They will know about and use valid health information, products, and services. Students will advocate for healthy families and communities.

- 1.3: Students demonstrate the ability to work cooperatively when advocating for healthy individuals, families and schools.
- 1.5: Students recognize the need to be an advocate for family and community health.