

Course Syllabus

Science, Grade 7

Grade 7 Science, Final
Guardian Angels School

The ITBS Form A for science measures the skills and achievement of students.

The MEAP assesses student progress in Science.

The Science performance standards are built upon the National Research Council's "National Science Education Standards" (1996) and the American Association for the Advancement of Science's Project 2061 "Benchmarks for Science Literacy" (1993).

Science is a way of making sense of the natural world. Scientists seek to describe its complexity, to explain its systems and events, and to find the patterns that allow for predictions. Science is the basis for the design of technologies that solve real world problems.

Not all students will become scientists or engineers. But science and technology occupy ever-expanding places in our everyday lives. As citizens, we are asked to make decisions about social issues that involve science and technology. As workers, we have occupations that increasingly involve science and technology. In the 21st century, adults will need to be comfortable and competent in a complex, scientific and technological world. Schools have the responsibility of preparing students for the future. Schools must prepare all students -- regardless of their future aspirations -- to be scientifically literate.

Therefore, all graduates of our schools should be:

*knowledgable about the important concepts and theories of the three major branches of scientific study: earth, life, and physical sciences;

*able to think scientifically and use scientific knowledge to make decisions about real world problems;

*able to construct new knowledge for themselves through research, reading, and discussion;

*familiar with the natural world, and respectful of its unity, diversity, and fragility;

*able to make informed judgments on statements and

debates claiming to have a scientific basis; and,

*able to reflect in an informed way on the role of science in human affairs.

To make this happen, education needs to:

1. emphasize understanding, not content coverage;
2. promote learning that is useful and relevant;
3. emphasize scientific literacy for ALL students; and,
4. promote interdisciplinary learning.

The "Michigan Content Standards and Benchmarks" describe three broad categories of activities that are common in scientifically literate individuals: using scientific knowledge; constructing new scientific knowledge, and reflecting o knowledge. The content strands are directly related to these types of activities.

The ITBS Form A for science measures the skills and achievement of students in seventh grade.

The New Standards for Science provide Performance Standards for students in grades 5-8.

The Michigan Science Curriculum Framework provides standards and benchmarks for students in grades 6-8.

Life Science

The Life Science unit addresses the characteristics and cycles of and relationships between living things and their environments. Topics include cellular organization, classification, ecosystems, genetics, and human health issues.

- The learner will be able to explain evidence that plants produce and store food.
- The learner will be able to describe how plant and animal materials are beneficial to people.
- The learner will be able to recognize materials that cycle through the environment.

Course Syllabus

Science, Grade 7

Grade 7 Science, Final
Guardian Angels School

- The learner will be able to understand the interactions within an environment.
- The learner will be able to describe how processes and systems work together in plants and animals.
- The learner will be able to explain how characteristics are passed on through generations.
- The learner will be able to comprehend the life cycles of living things.
- The learner will be able to describe how cells use food as a source of energy.
- The learner will be able to estimate the impact of alterations in one population in a food web on other populations.
- The learner will be able to describe how plant and animal materials are used by humans.
- The learner will be able to compare and contrast single-celled and multicellular organisms.
- The learner will be able to describe why plants and animals need specialized cells.
- The learner will be able to explain typical relationship patterns among populations.
- The learner will be able to compare the structures of living things.
- The learner will be able to show comprehension of the structure of organisms.
- The learner will be able to classify living things into groups based on structure.
- The learner will be able to develop an understanding of environmental adaptation.
- The learner will be able to describe the life cycle of a flowering plant.
- The learner will be able to explain the probable succession of an ecosystem.
- The learner will be able to explain how all organisms within an ecosystem obtain energy from sunlight, either directly or indirectly.
- The learner will be able to describe how plant and animal materials benefit humans.
- The learner will be able to describe how certain animal systems and processes work together.
- The learner will be able to show evidence that every part of an organism is composed of cells.
- The learner will be able to explore the alterations in communities of organisms over time.
- The learner will be able to comprehend ecosystems.
- The learner will be able to describe the relationships between parts of ecosystems.
- The learner will be able to describe the distribution of energy to organisms in an ecosystem.
- The learner will be able to examine the ecological impact of human interactions with the environment.
- The learner will be able to explain the way in which materials are reused in the environment.
- The learner will be able to explain how scientists are able to trace evolutionary relationships between past and present life forms.
- The learner will be able to describe the way in which scientists form and scientifically test the theories pertaining to the evolution of species.
- The learner will be able to predict how changes in one food web will affect other food webs and populations.
- The learner will be able to understand the heredity of living things.
- The learner will be able to find differences in the life cycles of a variety of organisms.
- The learner will be able to describe the way in which scientists form and scientifically test theories pertaining to the origin of life.
- The learner will be able to comprehend the function of living systems.

Course Syllabus

Science, Grade 7

Grade 7 Science, Final
Guardian Angels School

- The learner will be able to comprehend the structure of living systems.
- The learner will be able to understand the behavior and regulation of living things.
- The learner will be able to describe how organisms obtain and utilize energy.
- The learner will be able to explain the way in which organisms transform energy.
- The learner will be able to explore how organisms obtain and utilize energy.
- The learner will be able to comprehend populations.
- The learner will be able to compare and contrast living things using their structure.
- The learner will be able to understand the adaptations and diversity of organisms.
- The learner will be able to explain groups of organisms by utilizing classification systems.
- The learner will be able to compare ways that organisms are adapted to survive and reproduce in their environments.
- The learner will be able to comprehend reproduction.
- The learner will be able to describe the reasons that living things within a species differ.
- The learner will be able to describe how species extinction occurs.
- The learner will be able to plan basic investigations.
- The learner will be able to use observation skills to develop scientific questions about the world.
- The learner will be able to evaluate the strengths and weaknesses of an argument, claim, or scientific data.
- The learner will be able to use various resources to solve problems.
- The learner will be able to explain limits in personal knowledge.
- The learner will be able to understand the skills required to do scientific inquiry.
- The learner will be able to understand methods of scientific inquiry.
- The learner will be able to comprehend that analysis and interpretation are components of scientific inquiry.
- The learner will be able to identify the additions to science that individuals from a variety of backgrounds have contributed.
- The learner will be able to demonstrate how math, science and technology apply in real world scenarios.
- The learner will be able to develop and follow procedures, such as instructions, recipes, formulas, flow charts, and drawings.
- The learner will be able to use measurement tools in a scientific investigation to provide consistency.
- The learner will be able to perform basic investigations.
- The learner will be able to identify the contributions to scientific thought of people from several cultures.
- The learner will be able to explain potential risks and benefits of introducing a new technology.

Research and Inquiry

The Research and Inquiry unit focuses on the knowledge, processes, and real world issues associated with science and technology. Topics include experimentation, data analysis, science related careers, and technological advances.

- The learner will be able to explore toys and/or simple appliances and use instructions and suitable safety precautions to explain how they work.