# Geneva CUSD 304 Content-Area Curriculum Frameworks Grades 6-12 Science

| Mission Statement | The Mission of Science Education Is:  |
|-------------------|---|
|                   |   |
|                   | 1) to nurture an active interest in science that continues throughout life.                                 |
|                   | 2) to teach the learning skills and concepts necessary for the scientific process.                          |
|                   | 3) to develop student understanding of the interrelationships between science, society, and the environment |
|                   | 4) to encourage students to discover and develop their talent in science.                                   |
| Course Sequence   |   |
| (Grades 6-12)     | 6 <sup>th</sup> grade:  |
|                   | Earth Science   |
|                   | 7th grade:  |
|                   | Life Science  |
|                   | 8 <sup>th</sup> grade:  |
|                   | Physical Science  |
|                   | 9 <sup>th</sup> grade:  |
|                   | General Science   |
|                   | Earth Science   |
|                   | Biology   |
|                   | Biology Honors  |
|                   | $10^{m}, 11^{m}, 12$ grade:   |
|                   | Chemistry<br>Chamistry Hanara   |
|                   | Chemistry Honors<br>Device  |
|                   | Astronomy   |
|                   | Astronomy<br>Natural Disasters  |
|                   | Anatomy and Physiology I and II   |
|                   | Horticulture I and II   |
|                   | AP Chemistry  |
|                   | AP Biology  |
|                   | AP Environmental Science  |
|                   |   |

# Course Framework

| Course Title<br>Grade Level<br>Semesters (1-2-3-4) | General Science<br>9th<br>2   |
|--|---|
| Prerequisite                                       | none  |
| Course Description                                 | General Science is an introduction to life science and physical<br>science for the student who has difficulty with reading and science<br>concepts. The course utilizes a multi-media approach with<br>laboratories, group work, films, study sheets, and textbook readings.<br>Areas of study include body systems; plant and animal systems;<br>chemistry in the home; fundamentals of electricity; maps and<br>models of the earth; ecology; chemical elements, molecules, and<br>reactions; earth materials; and magnetism, light, and sound. |
| District-approved Materials<br>and/or Resources    | General Science<br>Publisher: AGS<br>ISBN: 0-7854-2192-0<br>Copy write: 2002  |

| Unit of Study:<br>major topics<br>Illinois Learning  | The Metric System<br>STATE GOAL 11: Understand the pro   | Resources that will support instruction<br>Measurement Lab<br>Movie: Measurement Lab<br>Mass Lab;<br>Volume Lab<br>Density Lab<br>Scientific Lab<br>Microscope Labs #1; #2; #3<br>cesses of scientific inquiry and  |
|--|--|---|
| Standards,   | technological design to investigate questions, conduct experiments and solve   |   |
| Benchmarks,  | problems.  | , <b>i</b>  |
| National Standards<br>Assessment<br>Frameworks, or<br>other standards<br>that will be taught<br>in this unit | <ul> <li>A. Know and apply the concepts, princi<br/>11.A.4a Formulate hypotheses referencing<br/>11.A.4b Conduct controlled experiments of<br/>11.A.4c Collect, organize and analyze dat<br/>11.A.5c Conduct systematic controlled ex<br/>STATE GOAL 13: Understand the rela<br/>and society in histori<br/>13.A.4b Assess the validity of scientific d<br/>sample size, similar previous ex<br/>misrepresentation of data presentation</li> </ul> | iples and processes of scientific inquiry.<br>g prior research and knowledge.<br>or simulations to test hypotheses.<br>a accurately and precisely.<br>periments to test the selected hypotheses.<br><b>Ationships among science, technology</b><br><b>cal and contemporary contexts.</b><br>ata by analyzing the results, sample set,<br>sperimentation, possible<br>nted and potential sources of error. |
| Objectives   |  |   |
| • Conceptual   | • To explain why measurement is in   | nportant  |
| • Factual  | • To use the basic metric units of length, area, volume, and mass  |   |
| o Procedural   | • To explain the meaning of prefixes used with metric units of measurement   |   |
|  | $\circ$ To convert metric units  | ig metric units   |
|  |  |   |
| Assessments  | Homework completion<br>Experiment<br>Lab work and reports<br>Quizzes<br>Exams  | Other Evidence  |

| Unit of Study:<br>major topics   | Mapping-Describing Earth  | Resources that will support instruction<br>Illinois Map Lab<br>Constructing Topographic Map Lab   |
|--|---|---|
| Illinois Learning<br>Standards,<br>Benchmarks,<br>National Standards<br>Assessment<br>Frameworks, or<br>other standards<br>that will be taught<br>in this unit | <ul> <li>STATE GOAL 12: Understand the function interconnections of the life, physical and 12.D.5a Analyze factors that influence the friction, wind shear, cross currer</li> <li>12.D.5b Analyze the effects of gravitation a physical system.</li> </ul>  | damental concepts, principles and<br>d earth/space sciences.<br>e relative motion of an object (e.g.,<br>hts, potential differences).<br>hal, electromagnetic and nuclear forces on |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments   | <ul> <li>To describe Earth's shape and feat</li> <li>To explain what causes day and ni</li> <li>To explain what causes seasons</li> <li>To use latitude and longitude to lo</li> <li>Homework completion</li> <li>Experiment</li> <li>Lab work and reports</li> <li>Quizzes</li> <li>Exams</li> </ul> | cures<br>ght<br>cate points on Earth's surface<br>Other Evidence  |

| Unit of Study:<br>major topics   | Living Things/Animals   | Resources that will support instruction<br>Movie: Cells<br>Comparing Cells Lab      |
|--|---|---|
| Illinois Learning<br>Standards,<br>Benchmarks,   | STATE GOAL 12: Understand the fundamental concepts, principles and interconnections of the life,<br>physical and earth/space sciences.  |   |
| National Standards<br>Assessment<br>Frameworks, or<br>other standards<br>that will be taught<br>in this unit | <ul> <li>12.A.4b Describe the structures and organization of cells and tissues that underlie basic life functions including nutrition, respiration, cellular transport, biosynthesis and reproduction.</li> <li>12.A.5a Explain changes within cells and organisms in response to stimuli and changing environmental conditions (e.g., homeostasis, dormancy).</li> </ul> |   |
| Objectives<br>o Conceptual<br>o Factual<br>o Procedural  | <ul> <li>To explain what a cell is and desc<br/>things</li> <li>To identify chemicals that are imp<br/>things use these chemicals</li> </ul>  | ribe the organization of cells in living<br>portant for life and explain how living |
|  | <ul> <li>To describe some basic life activities</li> <li>To describe the similarities and differences between living things in the five kingdoms</li> </ul>   |   |
| Assessments  | Homework completion<br>Experiment<br>Lab work and reports<br>Quizzes<br>Exams   | Other Evidence  |

| Unit of Study:   | Bunsen Burner  | Resources that will support instruction  |
|--|--|--|
| major topics   |  | Bunsen Burner Lab #1; #2; #3   |
|  |  |  |
| Illinois Learning<br>Standards,<br>Benchmarks,<br>National Standards<br>Assessment<br>Frameworks, or<br>other standards<br>that will be taught<br>in this unit | <ul> <li>STATE GOAL 11: Understand the process technological design to experiments and solve</li> <li>11.B.4a Identify a technological design product.</li> <li>11.B.4b Propose and compare different so based upon given constraints incontime.</li> <li>11.B.4c Develop working visualizations of blueprints, schematics, flowchar</li> <li>11.B.4e Develop and test a prototype or si available materials, instruments</li> <li>11.B.4g Using available technology, reponthe design based on the test resu</li> <li>11.B.5c Build and test different models on suitable materials, tools and technologi and test design based and refine its design based bas</li></ul> | sses of scientific inquiry and<br>o investigate questions, conduct<br>e problems.<br>Toblem inherent in a commonly used<br>oblution designs to the design problem<br>cluding available tools, materials and<br>of the proposed solution designs (e.g.,<br>ts, cad-cam, animations)<br>imulation of the solution design using<br>and technology.<br>rt to an audience the relative success of<br>lts and criteria.<br>r simulations of the design solution using<br>mology<br>sign based on the test results. |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul>   | To identify the parts of a Bunsen burner.<br>To manipulate glass into specific shapes and forms  |  |
| Assessments  | Homework completion<br>Experiment<br>Lab work and reports<br>Quizzes<br>Exams  | Other Evidence   |

| Unit of Study:  | Human Body  | Resources that will support instruction   |
|---|---|---|
| major topics  |   | Heart Rate Lab; Pulse Lab   |
| U I   |   | Digestion Movie; Circulation Movie  |
|   |   | Counting Calories Lab: Lung Lab   |
|   |   | Food Starch/Fat Lab   |
| Illinois Learning   | STATE GOAL 11: Understand the processes of scientific inquiry and   |   |
| Standards   | technological design to investigate questions, conduct  |   |
| Renchmarks  | experiments and solve problems.   |   |
| Deneminar KS,   | A. Know and apply the concepts, principles and processes of scientific inquiry.   |   |
| National Standarda  | 11.A.4b Conduct controlled experiments or simulations to test hypotheses.   |   |
| Aggggmont   | 11.A.4c Collect, organize and analyze data accurately and precisely.  |   |
| Assessment  |   |   |
| Frameworks, or  | STATE GOAL 12: Understand the fundation   | mental concepts, principles and   |
| other standards   | A Know and apply concepts that explain  | how living things function adapt and  |
| that will be taught   | change  | now inving times function, adapt and  |
| in this unit  | 12.A.4b Describe the structures and organ   | nization of cells and tissues that underlie   |
|   | basic life functions including nu   | trition, respiration, cellular transport,   |
|   | biosynthesis and reproduction.  |   |
|   |   |   |
|   |   |   |
|   |   |   |
|   |   |   |
|   |   |   |
| Objectives  |   |   |
| Objectives<br>o Conceptual  | • To identify the seven body system   | s that carry out basic life activities  |
| Objectives<br>o Conceptual<br>o Factual   | <ul> <li>To identify the seven body system</li> <li>To describe the structure and function</li> </ul>   | s that carry out basic life activities tion of each body system   |
| Objectives<br>o Conceptual<br>o Factual<br>o Procedural                                       | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems w</li> </ul>                                       | ts that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life                   |
| ObjectivesoConceptualoFactualoProcedural  | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems wactivities</li> </ul>                             | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life                   |
| Objectives<br>o Conceptual<br>o Factual<br>o Procedural<br>Assessments                        | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems wativities</li> <li>Performance Tasks</li> </ul>   | ts that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |
| Objectives•Conceptual•Factual•Procedural  | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems wativities</li> <li>Performance Tasks</li> </ul>   | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |
| Objectives<br>· Conceptual<br>· Factual<br>· Procedural<br>Assessments                        | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems wativities</li> <li>Performance Tasks</li> </ul>   | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |
| Objectives<br><ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems w activities</li> <li>Performance Tasks</li> </ul> | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |
| Objectives<br>· Conceptual<br>· Factual<br>· Procedural<br>Assessments                        | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems wativities</li> <li>Performance Tasks</li> </ul>   | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |
| Objectives•Conceptual•Factual•Procedural  | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems wativities</li> <li>Performance Tasks</li> </ul>   | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |
| Objectives0Conceptual0Factual0Procedural  | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems w activities</li> <li>Performance Tasks</li> </ul> | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |
| Objectives<br><ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments | <ul> <li>To identify the seven body system</li> <li>To describe the structure and func</li> <li>To recognize that body systems wativities</li> <li>Performance Tasks</li> </ul>   | is that carry out basic life activities<br>tion of each body system<br>ork together to carry out basic life<br>Other Evidence |

| Unit of Study:<br>major topics<br>Illinois Learning<br>Standards,<br>Benchmarks,<br>National Standards<br>Assessment<br>Frameworks, or<br>other standards<br>that will be taught<br>in this unit | Ecology<br>STATE GOAL 12: Understand the fundation<br>interconnections of the<br>B. Know and apply concepts that described<br>other and with their environment.<br>12.B.4a Compare physical, ecological and<br>interactions and interdependence<br>12.B.4b Simulate and analyze factors that<br>populations within ecosystems (<br>migration patterns).  | Resources that will support instruction<br>Movie: Ecology; Swift Fox<br>Predator/Prey Lab<br>mental concepts, principles and<br>e life, physical and earth/space sciences.<br>e how living things interact with each<br>d behavioral factors that influence<br>e of organisms.<br>influence the size and stability of<br>e.g., birth rate, death rate, predation, |
|--|--|---|
| Objectives<br>o Conceptual<br>o Factual<br>o Procedural  | <ul> <li>-To identify ways in which living thin nonliving things.</li> <li>-To describe feeding relationships amount of the second seco</li></ul> | gs interact with one another and with<br>ong the organisms in the community<br>n ecosystems<br>gh ecosystems  |
| Assessments  | Performance Tasks  | Other Evidence  |

|  | Minerals And Rocks   | Resources that will support instruction                                |
|--|--|--|
| major topics   |  | Mineral Lab; Flame Test Lab  |
|  |  | Movie:Minerals in Our Earth  |
|  |  | Movie: Rock Cycle; Rocks that  |
|  |  | Originate Underground; Rocks on the                                    |
|  |  | Earth's Surface  |
|  |  | Rock Lab   |
|  |  |  |
| Illinois Learning  |  |  |
| Standards,   | <b>SIAIE GUAL II: Understand the processes of scientific inquiry and</b>   |  |
| Benchmarks,  | technological design to investigate questions, conduct<br>experiments and solve problems   |  |
|  | A. Know and apply the concents, principles and processes of scientific inquiry   |  |
| National Standards   | 11.A.4a Formulate hypotheses referencing   | g prior research and knowledge.  |
| Assessment   | 11.A.4b Conduct controlled experiments   | or simulations to test hypotheses.                                     |
| Frameworks, or   | <b>11.A.4c</b> Collect, organize and analyze dat   | a accurately and precisely.  |
| other standards  | <b>11.A.4e</b> Formulate alternative hypotheses  | to explain unexpected results.   |
| that will be taught  | SIAIE GOAL 12: Understand the fund   | damental concepts, principles and                                      |
| in this unit   | sciences   | ie me, physical and earth/space  |
|  | C. Know and apply concepts that descr  | ibe properties of matter and energy                                    |
|  | and the interactions between them.   | the properties of matter and energy                                    |
|  | <b>12.C.4b</b> Analyze and explain the atomic and nuclear structure of matter.   |  |
|  |  |  |
|  |  |  |
| Objectives   | -To explain what a mineral is  |  |
| Objectives<br>o Conceptual   | -To explain what a mineral is  |  |
| Objectives<br>o Conceptual<br>o Factual  | -To explain what a mineral is<br>-To identify basic properties of all min  | nerals   |
| ObjectivesoConceptualoFactualoProcedural   | -To explain what a mineral is<br>-To identify basic properties of all min  | nerals   |
| ObjectivesoConceptualoFactualoProcedural   | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals</li> <li>-To compare minerals by their properties</li> </ul>   | nerals<br>ies  |
| ObjectivesoConceptualoFactualoProcedural   | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals of all minerals by their properties</li> <li>-To explain what a rock is</li> </ul>   | nerals<br>ies  |
| ObjectivesoConceptualoFactualoProcedural   | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals</li> <li>-To compare minerals by their propertion of a sector of the sector</li></ul>  | nerals<br>ies  |
| Objectives<br><ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul>          | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their properties</li> <li>-To compare minerals by their properties</li> <li>-To explain what a rock is</li> <li>-To describe how igneous, sedimentar</li> </ul>   | nerals<br>ies<br>y, and metamorphic rocks are formed                   |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul>             | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their properties</li> <li>-To compare minerals by their properties</li> <li>-To explain what a rock is</li> <li>-To describe how igneous, sedimentaries</li> </ul>  | nerals<br>ies<br>y, and metamorphic rocks are formed                   |
| Objectives<br><ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul>          | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their propertion of a minerals by their propertion of the section of the s</li></ul> | nerals<br>ies<br>y, and metamorphic rocks are formed                   |
| Objectives<br>• Conceptual<br>• Factual<br>• Procedural                                    | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their properties</li> <li>-To compare minerals by their properties</li> <li>-To explain what a rock is</li> <li>-To describe how igneous, sedimentar</li> <li>-To describe the rock cycle</li> </ul>  | nerals<br>ies<br>y, and metamorphic rocks are formed                   |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their propertion of a compare minerals by their propertion of the compare minerals by their propertion of the compare minerals by their properties of all minerals by the compare minerals by the com</li></ul> | nerals<br>ies<br>y, and metamorphic rocks are formed<br>Other Evidence |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their properter</li> <li>-To compare minerals by their properter</li> <li>-To explain what a rock is</li> <li>-To describe how igneous, sedimentar</li> <li>-To describe the rock cycle</li> <li>Performance Tasks</li> </ul>   | nerals<br>ies<br>y, and metamorphic rocks are formed<br>Other Evidence |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their propertere and the second second</li></ul> | nerals<br>ies<br>y, and metamorphic rocks are formed<br>Other Evidence |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their properter</li> <li>-To compare minerals by their properter</li> <li>-To explain what a rock is</li> <li>-To describe how igneous, sedimentare</li> <li>-To describe the rock cycle</li> <li>Performance Tasks</li> </ul>  | nerals<br>ies<br>y, and metamorphic rocks are formed<br>Other Evidence |
| Objectives <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> Assessments | <ul> <li>-To explain what a mineral is</li> <li>-To identify basic properties of all minerals by their properter</li> <li>-To compare minerals by their properter</li> <li>-To explain what a rock is</li> <li>-To describe how igneous, sedimentar</li> <li>-To describe the rock cycle</li> <li>Performance Tasks</li> </ul>   | nerals<br>ies<br>y, and metamorphic rocks are formed<br>Other Evidence |

| Unit of Study:   | Weathering and Erosion  | Resources that will support instruction |
|--|---|---|
| major topics   |   | Movie: Weathering and Erosion; Water    |
|  |   | Cycle; Mass Wasting; Amazing Earth      |
|  |   | Rock Shake Lab; Freezing Lab; Soils     |
|  |   | Weather Lab; Soils Lab                  |
| Illinois Learning<br>Standards,<br>Penahmarks  | STATE GOAL 11: Understand the processes of scientific inquiry and<br>technological design to investigate questions, conduct<br>experiments and solve problems.  |   |
| Dencimai K5,   |   |   |
| National Standards<br>Assessment<br>Frameworks, or<br>other standards<br>that will be taught<br>in this unit | <ul> <li>A. Know and apply the concepts, principles and processes of scientific inquiry.</li> <li>11.A.4a Formulate hypotheses referencing prior research and knowledge.</li> <li>11.A.4b Conduct controlled experiments or simulations to test hypotheses.</li> <li>11.A.4c Collect, organize and analyze data accurately and precisely.</li> <li>11.A.4d Apply statistical methods to the data to reach and support conclusions.</li> <li>STATE GOAL 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.</li> <li>E. Know and apply concepts that describe the features and processes of the Earth and its resources.</li> <li>12.E.4a Explain how external and internal energy sources drive Earth processes (e.g., solar energy drives weather patterns; internal heat drives plate tectonics).</li> </ul> |   |
| Objectives<br>o Conceptual   | -To define weathering   |   |
| <ul><li>Factual</li><li>Procedural</li></ul>   | -To identify different kinds of weathering  |   |
|  | -To describe how water, wind, ice, and gravity cause erosion  |   |
|  | -To describe how deposition creates landforms   |   |
| Assessments  | Performance Tasks   | Other Evidence                          |
|  |   |   |
|  |   |   |

|   | Forces Inside Earth   | Resources that will support  |  |
|---|---|--|--|
| major topics  |   | instruction  |  |
|   |   | Pangaea Lab; Convection Current  |  |
|   |   | Lab; Earth Quake Waves Lab;  |  |
|   |   | Triangulation Lab  |  |
|   |   | Movie: Ring of Fire; Plate   |  |
|   |   | Tectonics; Earthquakes; Island of                                      |  |
|   |   | Fire; Nature's Fury  |  |
| Illinois Learning   |   |  |  |
| Standards,  | SIAIE GUAL II: Understand the processes of scientific inquiry and   |  |  |
| Benchmarks,   | experiments and solve problems.   |  |  |
|   | experiments and solve problems.   |  |  |
| National Standards  | A. Know and apply the concepts, princ   | A. Know and apply the concepts, principles and processes of scientific |  |
| Assessment  | inquiry.  |  |  |
| Frameworks, or  | <b>11.A.4a</b> Formulate hypotheses referencing   | ng prior research and knowledge.                                       |  |
| other standards   | <b>11.A.40</b> Conduct controlled experiments<br><b>11 A 4c</b> Collect organize and analyze da   | ta accurately and precisely  |  |
| in this unit  | STATE GOAL 12: Understand the fur   | damental concepts, principles and                                      |  |
|   | interconnections of the life, physical and earth/space  |  |  |
|   | sciences.   |  |  |
|   | E. Know and apply concepts that describe the features and processes of  |  |  |
|   | the Earth and its resources.  |  |  |
|   | processes (e.g., solar energy drives weather patterns: internal heat  |  |  |
|   | drives plate tectonics).  | es weather patterns, internal neat                                     |  |
|   | 1 /   |  |  |
| Objectives  |   |  |  |
| Objectives  |   |  |  |
| • Conceptual  | -To describe the structure of Earth   |  |  |
| • Conceptual<br>• Factual   | -To describe the structure of Earth   |  |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | -To describe the structure of Earth<br>-To explain the theory of plate tecton   | ics  |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | -To describe the structure of Earth<br>-To explain the theory of plate tecton   | ics  |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonical</li> </ul>   | ics<br>s   |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonication</li> </ul>  | ics<br>s   |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonica</li> <li>-To explain how mountains form</li> </ul>  | ics<br>s   |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonica</li> <li>-To explain how mountains form</li> </ul>  | ics<br>s   |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonics</li> <li>-To explain how mountains form</li> <li>-To relate earthquakes to plate tecton</li> </ul>                            | ics<br>ics   |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonica</li> <li>-To explain how mountains form</li> <li>-To relate earthquakes to plate tecton</li> <li>Performance Tasks</li> </ul> | ics<br>s<br>ics<br>Other Evidence                                      |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonics</li> <li>-To explain how mountains form</li> <li>-To relate earthquakes to plate tecton</li> <li>Performance Tasks</li> </ul> | ics<br>s<br>ics<br>Other Evidence                                      |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonica</li> <li>-To explain how mountains form</li> <li>-To relate earthquakes to plate tecton</li> <li>Performance Tasks</li> </ul> | ics<br>s<br>ics<br>Other Evidence                                      |  |
| <ul> <li>Conceptual</li> <li>Factual</li> <li>Procedural</li> </ul> | <ul> <li>-To describe the structure of Earth</li> <li>-To explain the theory of plate tecton</li> <li>-To relate volcanoes to plate tectonica</li> <li>-To explain how mountains form</li> <li>-To relate earthquakes to plate tecton</li> <li>Performance Tasks</li> </ul> | ics<br>s<br>ics<br>Other Evidence                                      |  |

| Unit of Study:      | Solar System  | Resources that will support instruction    |
|---------------------|---|--|
| major topics        |   | Computers Lab on Planets; Orbits Lab;      |
| · ·                 |   | Solar System Lab; Brochure Project;        |
|                     |   | Sunspot Lab; Crater Lab                    |
|                     |   | Movie: Top 13 most Important               |
|                     |   | Astronomy Events; Moon And Beyond;         |
|                     |   | Meteor Impact; Apollo 13                   |
| Illinois Learning   |   |  |
| Standards,          | STATE GOAL 12: Understand the fundamental concepts, principles and  |  |
| Benchmarks,         | interconnections of the life, physical and earth/space  |  |
|                     | sciences.   |  |
| National Standards  | F. Know and apply concepts that explain the composition and structure of the universe and Farth's place in it                       |  |
| Assessment          | <b>UNIVERSE AND LATIN'S PLACE IN II.</b><br><b>12 F 49</b> Explain theories, past and present, for changes observed in the universe |  |
| Frameworks, or      | <b>12.F.4b</b> Describe and compare the chemic  | cal and physical characteristics of        |
| other standards     | galaxies and objects within galax   | xies (e.g., pulsars, nebulae, black holes, |
| that will be taught | dark matter, stars).  |  |
| in this unit        | 12.F.5a Compare the processes involved in the life cycle of stars (e.g.,  |  |
|                     | gravitational collapse, thermonu  | clear fusion, nova) and evaluate the       |
|                     | supporting evidence.<br>12 <b>F 5b</b> Describe the size and age of the u   | iniverse and evaluate the supporting       |
|                     | evidence (e.g., red-shift, Hubble   | 's constant)                               |
|                     |   |  |
| Objectives          | -To explain what the solar system is  |  |
| • Conceptual        |   |  |
| • Factual           | -To identify the four inner planets   |  |
| • Procedural        |   |  |
|                     | -To identify the five outer planets   |  |
|                     |   |  |
|                     | -To tell something about each planet  |  |
|                     |   |  |
|                     | -To describe the motions and positions of the planets   |  |
|                     |   |  |
|                     | -To compare comets and asteroids  |  |
| Assessments         | Performance Tasks   | Other Evidence                             |
|                     |   |  |
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| major topicsAtmosphere Lab; Absorption/Radiation<br>Lab; Weather Data Lab; Conduction<br>Lab; Humidity Lab                             |
|--|
| Lab; Weather Data Lab; Conduction<br>Lab; Humidity Lab   |
| Lab; Humidity Lab  |
|  |
| Movie: Skilling Series(4) on Weather;  |
| Unchanged Goddes;  |
| Illinois Learning STATE GOAL 11: Understand the processes of scientific inquiry and  |
| Standards, technological design to investigate questions, conduct  |
| Benchmarks, experiments and solve problems.  |
| A Know and apply the concents principles and processes of scientific inquiry   |
| National Standards A. Know and apply the concepts, principles and processes of scientific inquiry.                                     |
| Assessment 11.A.4b Conduct controlled experiments or simulations to test hypotheses.   |
| <b>Frameworks, or</b> 11.A.4c Collect, organize and analyze data accurately and precisely.   |
| other standards 11.A.4d Apply statistical methods to the data to reach and support conclusions.  |
| that will be taught 11.A.4e Formulate alternative hypotheses to explain unexpected results.  |
| in this unit STATE GOAL 12: Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space |
| sciences   |
| E. Know and apply concepts that describe the features and processes of the   |
| Earth and its resources.   |
| 12.E.4a Explain how external and internal energy sources drive Earth processes   |
| (e.g., solar energy drives weather patterns; internal heat drives plate  |
| tectonics).  |
|  |
| - 10 explain what weather is   |
| • Conceptual   |
| • Factual - To identify instruments that measure weather conditions  |
| • Procedural   |
| - To explain how air masses and fronts affect weather  |
|  |
| -10 read a weather map   |
| To describe verieus lrinds of storms   |
| - TO describe various kinds of storms  |
| To describe Forth's major elimetes   |
| A geogramonta Performance Teska Other Evidence   |
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| Unit of Study:      | Water/Oceans  | Resources that will support |  |
|---------------------|---|-----------------------------|--|
| major topics        |   | instruction                 |  |
| <b>9</b> I          |   | Oceans Lab                  |  |
|                     |   | Movie: Water Cycle          |  |
|                     |   |                             |  |
| Illinois Learning   |   |                             |  |
| Standards,          | STATE GOAL 12: Understand the fundamental concepts, principles and          |                             |  |
| Benchmarks,         | interconnections of the life, physical and earth/space                      |                             |  |
|                     | Sciences.   |                             |  |
| National Standards  | the Earth and its resources   |                             |  |
| Assessment          | <b>12.E.4a</b> Explain how external and internal energy sources drive Earth |                             |  |
| Frameworks, or      | processes (e.g., solar energy drives weather patterns: internal heat        |                             |  |
| other standards     | drives plate tectonics).  |                             |  |
| that will be taught |   |                             |  |
| in this unit        |   |                             |  |
|                     |   |                             |  |
| Objectives          | -To describe the water cycle  |                             |  |
| • Conceptual        |   |                             |  |
| • Factual           | -To explain how rivers and lakes form                                       |                             |  |
| • Procedural        |   |                             |  |
|                     | -To describe the ocean floor and other                                      | ocean features              |  |
|                     |   |                             |  |
|                     |   |                             |  |
| Assessments         | Performance Tasks   | Other Evidence              |  |
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| Unit of Study:                 | Electricity/Magnetism  | Resources that will support instruction |  |
|--------------------------------|--|---|--|
| major topics                   |  | - Stripe Lab; Microcurrent Lab; Circuit |  |
|                                |  | Boards Labs; Mini Circuit Lab;          |  |
|                                |  | Magnetic Lab; Wafer Lab                 |  |
|                                |  |   |  |
| Illinois Learning              |  | •                                       |  |
| Standards,                     | STATE GOAL 11: Understand the pro  | cesses of scientific inquiry and        |  |
| Benchmarks,                    | technological design to investigate questions, conduct experiments and solve problems. |   |  |
| National Standards             | A Know and apply the concepts principles and processes of scientific inquiry           |   |  |
| Assessment                     | <b>11.A.4a</b> Formulate hypotheses referencing prior research and knowledge.          |   |  |
| Frameworks, or                 | 11.A.4b Conduct controlled experiments   | or simulations to test hypotheses.      |  |
| other standards                | <b>11.A.4c</b> Collect, organize and analyze dat                                       | a accurately and precisely.             |  |
| that will be taught            | <b>11.A.4e</b> Formulate alternative hypotheses to explain unexpected results.         |   |  |
| in this unit                   | b. Know and apply the concepts, principles and processes of technological design       |   |  |
|                                | <b>11.B.4b</b> Propose and compare different solution designs to the design problem    |   |  |
|                                | based upon given constraints including available tools, materials and                  |   |  |
|                                | time.  |   |  |
|                                | <b>11.B.4c</b> Develop working visualizations of the proposed solution designs (e.g.,  |   |  |
|                                | 11 B 4 Develop and test a prototype or s   | is, cau-cam, animations)                |  |
|                                | available materials instruments and technology   |   |  |
|                                | ,  |   |  |
| Objectives                     | -To explain how electric current flows through a circuit                               |   |  |
| <ul> <li>Conceptual</li> </ul> |  |   |  |
| o Factual                      | -To compare series and parallel circuit  |   |  |
| <ul> <li>Procedural</li> </ul> |  |   |  |
|                                | -To describe various kinds of magnets  |   |  |
|                                |  |   |  |
|                                | -To explain what a magnetic field is   |   |  |
|                                |  |   |  |
|                                |  |   |  |
| Assessments                    | Performance Tasks  | Other Evidence                          |  |
| A33C3311C1113                  |  |   |  |
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| Unit of Study:      | Sound And Light  | Resources that will support instruction |  |  |
|---------------------|--|---|--|--|
| major topics        |  | Mirrors Lab; Lens Labs                  |  |  |
|                     |  |   |  |  |
|                     |  |   |  |  |
|                     |  |   |  |  |
| Illinois Learning   | STATE GOAL 11: Understand the pro  | cesses of scientific inquiry and        |  |  |
| Standards,          | technological design to investigate questions, conduct                           |   |  |  |
| Benchmarks,         | experiments and solve problems.  |   |  |  |
|                     | A Know and apply the concepts principles and processes of scientific inquiry     |   |  |  |
| National Standards  | <b>11.A.4a</b> Formulate hypotheses referencing prior research and knowledge.    |   |  |  |
| Assessment          | <b>11.A.4b</b> Conduct controlled experiments or simulations to test hypotheses. |   |  |  |
| Frameworks, or      | <b>11.A.4c</b> Collect, organize and analyze data accurately and precisely.      |   |  |  |
| other standards     |  |   |  |  |
| that will be taught |  |   |  |  |
| in this unit        |  |   |  |  |
| Objectives          | To explain how sounds are produced   |   |  |  |
| $\circ$ Concentual  | - To explain now sounds are produced   |   |  |  |
| • Factual           | -To explain how sound travels  |   |  |  |
| • <b>Procedural</b> | To explain now sound navels  |   |  |  |
|                     | -To describe the nature of light   |   |  |  |
|                     |  |   |  |  |
|                     | -To describe the visible spectrum  |   |  |  |
|                     |  |   |  |  |
|                     | -To explain reflection and refraction of light                                   |   |  |  |
|                     | -To explain how mirrors and lenses affect light rays                             |   |  |  |
| Assessments         | Performance Tasks  | Other Evidence                          |  |  |
|                     |  |   |  |  |
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| Unit of Study:                 | <b>Resources In Our Earth</b>  | Resources that will support        |  |
|--------------------------------|--|------------------------------------|--|
| major topics                   |  | instruction                        |  |
| <b>J</b>                       |  | Movie: Exxon Valdez: Exxon's       |  |
|                                |  | Story: Outrage at Valdez: 20/20    |  |
|                                |  | Exxon: Alaskan Pineline            |  |
|                                |  | Pasouroa Lab                       |  |
|                                |  | Oil Seill Lab                      |  |
|                                |  | Oli Spili Lab                      |  |
| Illinois Learning              |  |                                    |  |
| Standards,                     | STATE GOAL 13: Understand the relationships among science,                             |                                    |  |
| Benchmarks,                    | contexts   |                                    |  |
|                                | CONTEXIS.<br>A Know and apply the accented practices of science                        |                                    |  |
| National Standards             | <b>13 A 4a</b> Estimate and suggest ways to reduce the degree of risk involved in      |                                    |  |
| Assessment                     | science activities.  | dee the degree of fisk involved in |  |
| Frameworks, or                 | <b>13.A.4b</b> Assess the validity of scientific data by analyzing the results, sample |                                    |  |
| other standards                | set, sample size, similar previous experimentation, possible                           |                                    |  |
| that will be taught            | misrepresentation of data presented and potential sources of error.                    |                                    |  |
| in this unit                   |  |                                    |  |
|                                |  |                                    |  |
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|                                |  |                                    |  |
| Objectives                     |  |                                    |  |
| • Conceptual                   | - To be able to appreciate our limited resources                                       |                                    |  |
| o Factual                      |  |                                    |  |
| <ul> <li>Procedural</li> </ul> | - Explain the Exxon Valdez accident and repercussions                                  |                                    |  |
|                                |  |                                    |  |
|                                | - To recognize alternate sources of energy   |                                    |  |
|                                |  |                                    |  |
|                                | - To recognize the role man plays with the balance of the Earth's health               |                                    |  |
|                                |  |                                    |  |
|                                |  |                                    |  |
| Assessments                    | Performance Tasks  | Other Evidence                     |  |
|                                |  |                                    |  |
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