



Earth Science

Geology, the Environment, and the Universe

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STANDARDS

PAGE REFERENCES

Science

The Iowa Science Core Curriculum is a framework of science concepts and skills. This document provides a scaffold upon which each district will develop grade level expectations., The vision is that all Iowa students will have access to this common core and that individual, districts will decide how they will extend this core to meet the needs of their students.

The committee used international, national, and state level documents in this process. The final, core concepts and skills are drawn from the respected work of the National Research Council's, (NRC) National Science Education Standards (NSES). This document is framed upon the four, content categories (Science as Inquiry; Physical Science; Earth and Space Science; and Life, Science). The remaining categories (Science and Technology; Science in Personal and Social, Perspectives; and The History and Nature of Science) address the application of knowledge and, should be integrated throughout the content categories.

For this core to become viable, teachers will need to be aware of and effectively use research based, best practice instructional strategies. The Iowa Content Network -, <http://www.iowa.gov/educate/prodev/main.html> scrutinizes research in instruction and learning. This research base provided the impetus for the Every Learner Inquires (ELI) initiative. The, purpose of ELI is to establish a learning community among Iowa teachers as they utilize best, practices (such as learning cycles) to help students become more scientifically literate. ELI is a, state-wide teaching and learning initiative that will improve Iowa students' access to this core of, science concepts and skills. These two Department of Education programs should work hand in- hand to help students attain the scientific literacy necessary for success in the 21st century.

STANDARDS	PAGE REFERENCES
Science as Inquiry	
<ul style="list-style-type: none"> ▪ Identifies questions and concepts that guide scientific investigations. 	<p>Student Edition: 10-16 <i>National Geographic</i> 11 <i>GeoLab</i> 77, 103, 125, 153, 185, 243, 270-271, 305, 397, 429, 699 <i>Problem-Solving Lab</i> 122</p> <p>Teacher Wraparound Edition: A 19; DI 13; UAA 11</p>
<ul style="list-style-type: none"> ▪ Designs and conducts scientific investigations. 	<p>Student Edition: 10-16, 25#33 <i>MiniLab</i> 12 <i>GeoLab</i> 21, 77, 103, 153, 185, 243, 305, 397 <i>Inquiry Extension</i> 21, 77, 185, 853 <i>Apply Your Skill</i> 397</p> <p>Teacher Wraparound Edition: P 11</p>
<ul style="list-style-type: none"> ▪ Uses technology and mathematics to improve investigations and communications. 	<p>Student Edition: <i>GeoLab</i> 48-49, 243, 519, 553, 883 <i>Inquiry Extension</i> 48 <i>Problem-Solving Lab</i> 122 <i>Share Your Data</i> 125 <i>Data Analysis Lab</i> 182 <i>Launch Lab</i> 251</p> <p>Teacher Wraparound Edition: AC 253; ACT 253; TCS 255</p>
<ul style="list-style-type: none"> ▪ Formulates and revises scientific explanations and models using logic and evidence. 	<p>Student Edition: <i>GeoLab</i> 21, 77, 103, 125, 153, 185, 243, 270-271, 305, 397, 429, 699, 725 <i>Problem-Solving Lab</i> 122 <i>Apply Your Skill</i> 270 <i>Launch Lab</i> 281</p>
<ul style="list-style-type: none"> ▪ Recognizes and analyzes alternative explanations and models. 	<p>Student Edition: 468-472, 633-635, 799-803, 878-881 <i>Problem-Solving Lab</i> 122 <i>Share Your Data</i> 153 <i>Reading for Comprehension</i> 673 <i>GeoLab</i> 725</p> <p>Teacher Wraparound Edition: A 637; CFU 472, 637; D 34; DIS 593; E 595; TCS 468, 621</p>

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<ul style="list-style-type: none"> ▪ Communicates and defends a scientific argument. 	<p>Student Edition: 17-19 <i>Launch Lab</i> 5, 85, 193, 281 <i>GeoLab</i> 21, 77, 103, 125, 185, 243, 270-271, 305, 397 <i>Problem-Solving Lab</i> 148 <i>Share Your Data</i> 519 <i>Writing in Earth Science</i> 752 Teacher Wraparound Edition: A 5</p>
<ul style="list-style-type: none"> ▪ Understands about scientific inquiry. 	<p>Student Edition: 10-16, 17-19 <i>National Geographic</i> 11, 20, 666 <i>Earth Science and Technology</i> 47, 184, 610, 638 <i>Earth Science and the Environment</i> 124 <i>GeoLab</i> 270-271 <i>Apply Your Skill</i> 270 <i>Earth Science & Society</i> 333 Teacher Wraparound Edition: DI 13; ESJ 17; IM 17; TCS 15</p>
Earth and Space	
<ul style="list-style-type: none"> ▪ Understands and applies knowledge of energy in the earth system. 	<p>Student Edition: 286-288, 355-358, 421-422, 528-533, 539-542, 621-622, 714-719, 878-881 <i>Launch Lab</i> 707 <i>National Geographic Expeditions</i> 910-915, 916-921 Teacher Wraparound Edition: AC 879; DIS 717; ITP 356; R 622; TCS 286; TPK 421</p>
<ul style="list-style-type: none"> ▪ Understands and applies knowledge of Geochemical cycles. 	<p>Student Edition: 393-395, 629-631, 688 <i>Careers in Earth Science</i> 72 <i>Reading for Comprehension</i> 403 <i>Section Assessment</i> 395, 692 <i>Earth Science & Society</i> 396 <i>MiniLab</i> 631 <i>National Geographic</i> 689 Teacher Wraparound Edition: EC 395; M 689; TCS 165, 396</p>

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<ul style="list-style-type: none"> Understands and applies knowledge of the origin and evolution of the earth system. 	<p>Student Edition: 562-566, 567-573, 620-622, 623-627, 628-632, 633-637, 648-654, 660-665, 796-799 <i>Launch Lab</i> 619 <i>Section Assessment</i> 803</p> <p>Teacher Wraparound Edition: E 772; IM 624; R 659; TCS 567</p>
<ul style="list-style-type: none"> Understands and applies knowledge of the origin and evolution of the universe. 	<p>Student Edition: 847-851, 867-868, 873-874, 878-881 <i>MiniLab</i> 873 <i>Problem-Solving Lab</i> 874 <i>Writing in Earth Science</i> 881 <i>National Geographic Expeditions</i> 934-939</p> <p>Teacher Wraparound Edition: A 851; CFU 851, 881; CON 880; DI 848, 878, 880; DIS 867; IM 849; MI 878; R 868</p>
<p>Physical Science</p>	
<ul style="list-style-type: none"> Understands and applies knowledge of the structure of atoms. 	<p>Student Edition: 60-65 <i>Section Assessment</i> 65 <i>Problem-Solving Lab</i> 70</p> <p>Teacher Wraparound Edition: A 65; AC 113; CFU 65; CON 64; E 65, 70, 166; ESJ 60; ITI 61; M 64; TCS 63, 67</p>
<ul style="list-style-type: none"> Understands and applies knowledge of the structure and properties of matter. 	<p>Student Edition: 60-65, 66-72, 73-75, 86-95, 118-123, 141-144 <i>MiniLab</i> 62, 115 <i>GeoLab</i> 77, 103 <i>Reading for Comprehension</i> 109</p> <p>Teacher Wraparound Edition: ACT 69, 93; AES 61; CON 168; D 60; MI 60; TCS 63</p>
<ul style="list-style-type: none"> Understands and applies knowledge of chemical reactions. 	<p>Student Edition: 70-72, 112-117, 134, 166-170, 259-262 <i>Section Assessment</i> 72 <i>GeoLab</i> 103</p> <p>Teacher Wraparound Edition: AC 166; ACT 94; AES 166; CL 261; EC 71, 167; ITP 169; R 72; TCS 259; UST 166</p>

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<ul style="list-style-type: none"> Understands and applies knowledge of motions and forces. 	<p>Student Edition: 171, 423-425, 799-803 <i>GeoLab</i> 243 <i>MiniLab</i> 801</p> <p>Teacher Wraparound Edition: AC 43, 799; CFU 803; D 802; DI 800; TCS 197, 425</p>
<ul style="list-style-type: none"> Understands and applies knowledge of conservation of energy and increase in disorder. 	<p>Student Edition: 75 <i>Earth Science & Society</i> 333</p> <p>Teacher Wraparound Edition: E 718</p>
<ul style="list-style-type: none"> Understands and applies knowledge of interactions of energy and matter. 	<p>Student Edition: 75, 112-114, 136, 145-151, 171-175, 195-206, 286-288, 355-358, 528-533, 621-622 <i>GeoLab</i> 77, 125 <i>National Geographic</i> 357</p> <p>Teacher Wraparound Edition: ACT 293; CFU 75, 288; D 145; E 137; ESJ 114; IM 114; TPK 357</p>