

I. Teacher Preparation

A. Elementary School Licensure Requirements

1. Licensure Grade Levels

a. Does the state offer an Early Elementary Education credential (Preschool/Kindergarten to Grade 2/3)?	Yes	Early Childhood Teacher (Birth-2) ¹
b. Does the state offer an Elementary Education credential (Kindergarten/Grade 1 to Grade 5/6)?	Yes	Elementary Teacher (Grades K-6) ²

2. Early Elementary³

a. Is an educational practice examination required for licensure?	Yes
b. Is an examination in reading and writing or language arts required for licensure?	Yes
c. Is a mathematics examination required for licensure?	Yes
d. Is a science examination required for licensure?	No

3. Elementary Education³

a. Is an educational practice examination required for licensure?	No
b. Is an examination in reading and writing or language arts required for licensure?	Yes
c. Is a mathematics examination required for licensure?	Yes
d. Is a science examination required for licensure?	Yes

4. Licensure Renewal

a. What is the period of validity for an educator's license?	Less than 5 years	
	5 years	X
	Greater than 5 years	

b. Can in-service teachers receive certification credit for professional development courses/programs in Earth and Space Sciences?	Yes	X ⁴	The State of Delaware requires every educator to complete ninety (90) clock hours of professional development over the five (5) year renewal cycle of a Continuing License. For teachers, such activities will be aligned with the Delaware Professional Teaching Standards. This may include college credit or state or local approved professional development.
	No		
	Local issue		
	Unknown		

B. Elementary School Curriculum Support

1. Guidelines for Curriculum Development

a. Does the SEA provide guidelines for curriculum development, beyond the state’s science standards?	Yes
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b. If yes, which of the following does the state provide?	1. Science frameworks		
	2. Curriculum maps		
	3. Learning progressions		
	4. Benchmark maps		
	5. Templates for unit design	X	Delaware Science Coalition Unit Templates (2008)
	6. Curriculum development guides		
	7. Model units		
	8. Lesson plan templates/guides		
	9. Web-based lesson plan portals		
	10. Model lesson plans		
	11. Assessment guidelines		

2. Instructional Materials⁵

a. At what level does adoption of instructional materials occur?	State level	
	Local level	X

b. If the state is an adoption state, do adopted materials in science include those that address topics specific to the geosciences?	N/A	
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3. Support for New Standards⁴

a. Does that state provide resources to school systems to effectively implement the standards as they change?	Yes	X	There is funding from the legislation, the coalition, and industries partners.
	No		
	Local issue		
	Unknown		

4. Professional Development⁴

a. Does the SEA provide professional development that is, at least in part, specific to the geosciences?	Yes, provided by SEA	X	Geoscience PD is offered through SEA supported regional centers. Teachers receive professional development through the coalition, as it is determined necessary. The coalition provides the professional development and the state funds it. Instructors may choose to integrate or use GLOBE, WET, WILD or Project Learning Tree. Some schools may use these programs.
	Yes, but independent of SEA		
	No		
	Local issue		
	Unknown		

II. Curriculum

A. Elementary School State Science Standards

1. Organization⁶

a. What is the name of the state's elementary school science standards?	Next Generation Science Standards			
b. What is the grade-level arrangement of the standards?	Grade specific		X	
	Grade-level bands			
	Benchmark grade levels			
c. How are the standards outlined?	Overarching standard statements (level one)	X	d. What terms are used to identify each level?	Performance Expectations
	Sub-standard statements that provide more detail to the overarching standards (level two)			

2. Content⁶

a. Are the science standards subdivided according to scientific discipline (Physical Science, Life Science, and Earth and Space Science)?	Yes	The standards are grouped into four major domains: 1) Physical Sciences 2) Life Sciences 3) Earth and Space Sciences 4) Engineering, Technology, and Applications of Science
b. Are the Earth and Space Science standards identified by core ideas in the geosciences?	Yes	The standards can be organized according to Disciplinary Core Idea (DCI). The DCIs for Earth and Space Sciences are: ESS1 Earth's Place in the Universe -ESS1A: The Universe and its Stars -ESS1B: Earth and the Solar System -ESS1C: The History of Planet Earth ESS2 Earth's Systems -ESS2A: Earth Materials and Systems -ESS2B: Plate Tectonics and Large-Scale Systems -ESS2C: The Role of Water in Earth's Surface Processes -ESS2D: Weather and Climate -ESS2E: Biogeology ESS3 Earth and Human Activity -ESS3A: Natural Resources -ESS3B: Natural Hazards -ESS3C: Human Impacts on Earth Systems -ESS3D: Global Climate Change
c. Do the state's standards include current issues in the geosciences? Current issues in the geosciences can be	Yes	K: Students look the impact of humans on the local environment and consider ways to reduce that impact.

described as Earth science processes altered by human activities or Earth science processes that affect human well-being.		1: Students look at design solutions that reduce the impacts of weather-related hazards. 4: Students examine renewable and non-renewable energy resources and how their uses affect the environment 5: Students consider the impact of human activities on the environment and ways that these impacts can be reduced and resources and the environment can be protected.
d. Do the state's standards include career exploration in the geosciences?	No	

3. Development

a. When were the standards adopted or last revised?	Within the last two years (2014-2015)	X	Adopted in 2013-2014 ⁷
	Between 3-6 years ago (2010-2014)		
	Between 7-10 years ago (2006-2009)		
	More than 10 years ago (before 2006)		

b. Does the state have plans to review/revise its science standards?	Currently under review		
	Within the next 5 years (2015-2020)		
	Between 5 and 10 years from now (2020-2025)		
	No plan or timeline exists	X ⁴	
	Unknown		

B. Middle School State Science Standards

1. Content⁶

a. What is the name of the state's middle school science standards?	Next Generation Science Standards (NGSS)
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

C. High School State Science Standards

1. Content⁶

a. What is the name of the state's high school science standards?	Next Generation Science Standards (NGSS)
b. Are Earth and Space Science topics included in the standards?	Yes
c. Is Life Science and Physical Science content included in the standards?	Yes

D. High School Course Requirements

1. Credits Required for Graduation⁸

a. What is the total number of credits required for graduation?	24
b. What is the number of science credits required for graduation?	3

2. Course Content⁸

a. Is Life Science required?	Yes
b. Is Physical Science required?	No
c. Is Earth Science required?	No
d. Is Environmental Science required?	No
e. Is Earth Science accepted?	Not stated
f. Does Earth Science have to be lab-based?	Not stated

III. Instruction

A. Elementary School Approaches to Instruction

1. State Science Standards⁶

a. Do the state's science standards provide guidelines regarding any specific approach to be used for science teaching?	Yes
b. If so, what is the term used to identify this approach?	Science and Engineering Practices

c. Do the state's science standards provide a rationale for this approach?	Yes
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d. If so, what is the rationale?	“Engaging in the practices of science helps students understand how scientific knowledge develops; such direct involvement gives them an appreciation of the wide range of approaches that are used to investigate, model, and explain the world. Engaging in the practices of engineering likewise helps students understand the work of engineers, as well as the links between engineering and science. Participation in these practices also helps students form an understanding of the crosscutting concepts and disciplinary ideas of science and engineering; moreover, it makes students’ knowledge more meaningful and embeds it more deeply into their worldview.”
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2. Guidelines for Curriculum Planning

a. If the state offers guidelines for curriculum planning, do these advocate more specific strategies for science instruction?	No
b. If so, what are the strategies?	N/A

3. Technology⁴

a. Are decisions regarding the use of technology in elementary science classrooms made at the state level or local level?	Local level
b. What kinds of technology are being used by elementary school science teachers in the state?	Examples of technology used in DE include: Veneer probe, smart boards, handheld devices, weather stations, classroom laptop sets, and iPads.

IV. Learning Contexts

A. Elementary School Classrooms

1. Class Size⁴

a. What is the average number of students in an elementary classroom?	Unknown
b. What is the maximum allowable number of students in an elementary classroom?	K-3, 20 or under but districts can apply for waivers.

2. Instructional Time⁴

a. At the elementary level, are teachers recommended or required to dedicate a certain amount of instructional time to science?	There is no time requirement	X	
	Local decision		
	Teachers must spend a certain amount of time teaching science.		
	Unknown		

B. Elementary School Support Services

1. Specialized Support⁴

a. Are there specific policies in place regarding English as a Second Language (ESL) and Special Education services that could impact science instruction (e.g. pull-out or push-in models)?	Local level decision		There are immersion schools that teach science in Chinese and Spanish, which is help for those whom Spanish or Chinese is their native language. DE plans to have 20 dual language schools by 2020. Students who need remedial services for math, reading or literacy may be pulled from science.
	Depends on the specifications of a student's IEP or ILP	X	
	Teachers must follow specific practices regarding science		
	Unknown		

V. Extra-Curricular Programs

A. Elementary School Geosciences Enrichment Opportunities

1. After-School and Informal Education⁴

a. Are opportunities to engage in geoscience-related topics outside of school (e.g. after-school programs and informal education programs) being offered to students in the state?	Yes
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b. If so, what are they?	<p>Opportunities vary by school; examples include: 21st Century Grants with STEM focus, Lego Leagues, Robotics clubs, and STEAM (Science and the arts)</p> <p>Partnerships vary by districts. Some school districts partner with the DE Department of Natural Resources, DE Nature Society, or Chesapeake Watershed Project.</p>
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2. Remedial Education⁴

a. What remedial supports are in place for geosciences topics with which students are struggling?	Local level decision		Students are provided differentiated instruction to meet their needs.
	Remediation services are being provided to students in science	X	
	No remediation support in science		
	Unknown		

VI. Monitoring Systems

A. Elementary School Statewide Science Assessment

1. Structure and Content⁹

a. What is the name of the statewide standardized test in science at the elementary level?	1) 2014 Delaware Comprehensive Assessment System – Science (Students take the test in grade 5) 2) 2017 a new assessment will be used. Sample test items will be used this year.
b. At what grade(s) is the assessment implemented?	5
c. Does the statewide science assessment measure achievement of the state’s standards, i.e. is the assessment aligned with state standards?	Yes
d. Is the content of the statewide science assessment sub-divided by discipline, namely Physical Science, Life Science, Earth and Space Science?	Yes

e. Are there any plans for revising or changing the current elementary level science assessment?	No plans for revision		New Assessment to begin in 2016-2017 ¹⁰
	Revision is planned, but timeline is unknown		
	Revision is planned with implementation date set	X	
	Unknown		

2. Results¹¹

a. Is student achievement measured by Performance Level Descriptors?	Yes
b. If yes, how many performance levels are there?	4

3. District Level Reporting¹¹

a. At the district level, are the percentages of students performing at each PLD reported to the public?	Yes	
b. At the district level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	Yes	
c. If yes, is this data available to the public?	Yes	

4. State Level Reporting¹¹

a. At the state level, are the percentages of students performing at each PLD reported to the public?	Yes	
b. At the state level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	Yes	
c. If yes, is this data available to the public?	Unknown	

B. Elementary School International Assessments in Science

1. TIMSS¹²

a. Has the state participated in the Trends in International Mathematics and Science Study (TIMSS)?	No
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b. If yes, in which years did the state participate?	1995	
	2003	
	2007	
	2011	

C. Middle School Statewide Science Assessment

1. Structure and Content⁹

a. What is the name of the statewide standardized test in science at the middle school level?	Delaware Comprehensive Assessment System (DCAS)
b. At what grade(s) is the assessment implemented?	8
c. Does the assessment address Life Science concepts?	Yes
d. Does the assessment address Life Science concepts?	Yes
e. Does the assessment address Earth Science concepts?	Yes

C. High School Statewide Science Assessment(s)

1. Structure and Content⁹

a. What is the name of the state's standardized science assessment(s)?	Delaware Comprehensive Assessment System (DCAS)
b. At what grade level is the assessment implemented?	10
c. Does the assessment address Life Science concepts?	Yes
d. Does the assessment address Physical Science concepts?	Yes
e. Does the assessment address Earth Science concepts?	Yes

VII. Accountability

A. School Level

1. Individual Student

a. Does the state produce an Individual Student Report (ISR) that describes a student's performance on the state's science assessment?	Yes ¹³	<p>Schools provide an Individual Student Score Report to parents/guardians. The report is called the Delaware Comprehensive Assessment System Family Report. This report describes an individual student's performance on statewide assessments in terms of scale score and performance level.</p> <p>Grade 5 reports include student performance on the science assessment in terms of scale score and performance level. In addition, results are subdivided according to Reporting Category.</p> <p>The Reporting Categories for science are: Earth Science; Physical Science; Life Science</p> <p>Teachers access scores through the Online Reporting System (ORS). This is a secure online system that enables teachers and administrators to view student score reports and performance data for each student who completes the DCAS science assessment.</p>
b. Is the ISR made available to a student's parents or guardians?	Yes ¹³	
c. Is the ISR made available to a student's teacher?	Yes ¹⁴	
d. Does the ISR report student's performance in terms of scale score and achievement level?	Yes ¹³	
e. Does the ISR subdivide results by science discipline (Physical Science, Life Science, Earth and Space Science)?	Yes ¹³	

2. Teacher Appraisal¹⁵

a. Are students' results on the statewide science assessment a component of teacher evaluation?	No
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B. District Level

1. District Accreditation⁴

a. Are student outcomes in statewide science assessments at the elementary level part of accreditation of public schools at the district level?	Yes		<p>Science scores in the future will factor into the overall accountability of an LEA. Policies have not been developed yet.</p>
	No		
	At a future point	X	
	Local decision		
	Unknown		

C. State Level

1. Statewide Monitoring⁴

a. Are student outcomes in statewide science assessments at the elementary level used in monitoring the adequacy of state educational systems?	Yes	Informally used.
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2. Trends in Student Outcomes⁹

a. Does the SEA report to the public performance results on the state science assessment over time?	Yes
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b. If yes, how many years of achievement data are available?	3 years (2011-2012 to 2013-2014)		
	4-7 years (2007-2008 to 2013-2014)	X	4 years of data (2010-2014)
	8 to 10 years (2004-2005 to 2013-2014)		
	11 or more years (before 2004-2005)		

c. Are the results also subdivided by science discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)?	No
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¹ State of Delaware, Delaware General Assembly, Delaware Regulations, Title 14 Education, 1520 Early Childhood Teacher: <http://regulations.delaware.gov/AdminCode/title14/1500/1520.shtml>

² State of Delaware, Delaware General Assembly, Delaware Regulations, Title 14 Education, 1521 Elementary Teacher: <http://regulations.delaware.gov/AdminCode/title14/1500/1521.shtml>

³ State of Delaware, Delaware Department of Education, Delaware Educator Data System (DEEDS), Testing: http://deeds.doe.k12.de.us/certificate/deeds_testing.aspx

⁴ State of Delaware, Delaware Department of Education (personal communication).

⁵ Education Commission of the States, State Textbook Adoption: <https://www.ecs.org/clearinghouse/57/75/5775.htm>

⁶ Next Generation Science Standards, For States, By States: <http://www.nextgenscience.org/>

⁷ State of Delaware, Delaware Department of Education, Standards and Instruction, Science: <http://www.doe.k12.de.us/Page/1936>

⁸ State of Delaware, Delaware General Assembly, Delaware Regulations, Title 14 Education, 505 High School Graduation Requirements and Diplomas: <http://regulations.delaware.gov/AdminCode/title14/500/505.shtml#TopOfPage>

⁹ State of Delaware, Delaware Department of Education, Assessment, DCAS: <http://www.doe.k12.de.us/Page/423>

¹⁰ State of Delaware, Delaware Department of Education, Assessment, Five-Year Assessment Plan Feedback: <http://www.doe.k12.de.us/domain/359>

¹¹ State of Delaware, Delaware Department of Education, Assessment, Assessments-Related Reports and Information: <http://www.doe.k12.de.us/Page/443>

¹² U.S. Dept. of Education, Institute of Education Sciences, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), State and District Participation in TIMSS: <https://nces.ed.gov/TIMSS/benchmark.asp>

¹³ Delaware System of Student Assessments (DeSSA), Delaware Comprehensive Assessment System, A Guide to Navigating the DCAS Family Report: <http://de.portal.airast.org/wp-content/uploads/2013/06/2013-DCAS-Parents-Guide-2013-06-02.pdf>

¹⁴ Delaware System of Student Assessments (DeSSA), Delaware Comprehensive Assessment System, Educator Guide to the DCAS Parent Report: http://de.portal.airast.org/wp-content/uploads/2013/06/Educator_Guide_to_DCAS_Parent_Report.pdf