

## **SURVEYS OF ENACTED CURRICULUM<sup>®</sup>**

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### **Survey Of Instructional Practices**

#### **Teacher Survey**

#### **Grades K-12**

#### **Science**

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Thank you for agreeing to participate in this survey of instructional practices and content. This survey is part of a collaborative effort to provide education researchers, policymakers, administrators, and most importantly, teachers like yourself with comparative information about instruction in districts participating in the SEC Collaborative or in associated initiatives from states and districts around the country. To learn more about the surveys of enacted curriculum and their use in other projects, please visit the project website; <http://www.secsurvey.org>

Your participation in this survey is voluntary. If you choose to participate, your personal information will remain strictly confidential. Information that could be used to identify you or connect you to individual results will not be shared with staff in your school, district, or state. Individual respondents are never identified in any reports of results. The questionnaire poses no risk to you, and there is no penalty for refusal to participate. You may withdraw from the study simply by returning the questionnaire without completing it, without penalty or loss of services or benefits to which you would be otherwise entitled.

If you have any questions regarding your rights as a research participant, please contact the University of Wisconsin-Madison School of Education's Human Subjects Committee office at (608) 262-2463.



**Reporting Period: Most recent school year (current year, if reporting after March 1st)**

**Instructions for Selecting the Target Class**

*Science Instruction: For all questions about classroom practices, please refer only to activities in the science class that you teach. If you teach more than one science class, select the first class that you teach each week. If you teach a split class (i.e., the class is split into more than one group for science instruction) select only one group to describe as the target class.*

Please read each question and the possible responses carefully, and then mark your response by filling in the appropriate circle in the response section. A pen or pencil may be used to complete the survey.

# Survey of Instructional Practices for Science

**SCHOOL DESCRIPTION**

- 1 Which of these categories best describes the way your science classes at this school are organized? (Check all that apply)
- ① Departmentalized Instruction
  - ② Taught by Subject-Area Specialist (non-departmental)
  - ③ Self-Contained (e.g., teach multiple subjects)
  - ④ Team Taught
- 2 If your school is departmentalized, or you are a subject-area specialist, how many different science classes do you currently teach?
- ①    ②    ③    ④    ⑤    ⑥    ⑦  
(Number of classes taught)

**CLASS DESCRIPTION**

- 3 Which term best describes the target class, or course, you are teaching?
- ① Other
  - ② Elem./Middle Sch. Science
  - ③ General Science
  - ④ Life Science
  - ⑤ Earth Science
  - ⑥ Biology
  - ⑦ Chemistry
  - ⑧ Physics
  - ⑨ Coordinated/Integrated

**CLASS DESCRIPTION (cont.)**

- 4 What is the grade level of most of the students in the target class?
- ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪   ⑫
- K    1    2    3    4    5    6    7    8    9    10   11   12
- 5 How many students are in the target class?
- ①   10 or fewer                                  ③   21 to 25
- ②   11 to 15                                        ④   26 to 30
- ③   16 to 20                                        ⑤   31 or more
- 6 What percentage of the students in the target class are female? (Mark nearest 10%)
- ①                              ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨
- Less than 10    10    20    30    40    50    60    70    80    90+ %
- 7 What percentage of the students in the target class are not Caucasian? (Mark nearest 10%)
- ①                              ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨
- Less than 10    10    20    30    40    50    60    70    80    90+ %
- 8 During a typical week, approximately how many hours will the target class spend in science instruction?
- Number of instructional hours=**
- ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨
- 9 What is the average length of each class period for the target science class?
- ①   Not applicable                                  ④   61 to 90 minutes
- ②   30 to 40 minutes                                ⑤   91 to 120 minutes
- ③   41 to 50 minutes                                ⑥   Varies due to block scheduling or integrated instruction
- ④   51 to 60 minutes
- 10 For how many weeks will the target science class meet this school year in total?
- ①                              ②
- 1 to 12                              13 to 24                              25 or more
- Total number of weeks=**
- 11 What is the achievement level of most of the students in the target class, compared to national norms?
- ①   High achievement levels
- ②   Average achievement levels
- ③   Low achievement levels
- ④   Mixed achievement levels
- 12 What percentage of students in the target class are Limited English Proficient (LEP)?
- ①                              ②                              ③                              ④
- None    Less than 10%    10%-25%    26%-50%    More than 50%
- 13 What is considered most in scheduling students into the target class?
- ①   Ability or prior achievement                                  ③   Parent request
- ②   Limited English proficiency                                  ④   Student decision
- ③   Teacher recommendation                                  ⑤   No one factor more than another

## **HOMEWORK (work assigned to be completed *outside of class* )**

Answer the following questions with regard to your target class:

- |    |   |  |
|----|---|--|
| 14 | How often do you usually assign science homework to be completed outside of class?                                    | <input type="radio"/> ① Never (Skip to # 25)<br><input type="radio"/> ② Less than once per week<br><input type="radio"/> ③ Once or twice per week<br><input type="radio"/> ④ Three to four times per week<br><input type="radio"/> ⑤ Every day                                       |
| 15 | How many minutes do you expect a typical student to spend on a normal homework assignment completed outside of class? | <input type="radio"/> ① I do not assign homework<br><input type="radio"/> ② Less than 15 minutes<br><input type="radio"/> ③ 15 to 30 minutes<br><input type="radio"/> ④ 31 to 60 minutes<br><input type="radio"/> ⑤ 61 to 90 minutes<br><input type="radio"/> ⑥ More than 90 minutes |
| 16 | Does homework completed outside of class count toward student grades?   | <input type="radio"/> ① Never<br><input type="radio"/> ② Usually does not<br><input type="radio"/> ③ Usually does<br><input type="radio"/> ④ Always does   |
| 17 | How often do you assign homework to be completed in a small group outside of class?                                   | <input type="radio"/> ① Never<br><input type="radio"/> ② Less than once per week<br><input type="radio"/> ③ Once or twice per week<br><input type="radio"/> ④ Three to four times per week<br><input type="radio"/> ⑤ Every day  |

**AMOUNT OF HOMEWORK TIME**

**0 - None**  
**1 - Little** (*Less than 10% of homework time outside of class*)  
**2 - Some** (*10-25% of homework time outside of class*)  
**3 - Moderate** (*26-50% of homework time outside of class*)  
**4 - Considerable** (*More than 50% of homework time outside of class*)

<b>What percentage of the time that students in the target class spend on science homework done <i>outside of class</i> do you expect them to:</b>	<b>None</b>	<b>Little</b>	<b>Some</b>	<b>Moderate</b>	<b>Considerable</b>
18 Read about science in books, magazines, or articles	①	②	③	④	⑤
19 Answer questions from a science book or worksheet	①	②	③	④	⑤
20 Solve science problems that require computation	①	②	③	④	⑤
21 Revise and improve their own work (e.g., tests, homework assignments)	①	②	③	④	⑤
22 Collect data or information about science	①	②	③	④	⑤
23 Work on an assignment, report, or project that takes longer than one week to complete	①	②	③	④	⑤
24 Write about science	①	②	③	④	⑤

# INSTRUCTIONAL ACTIVITIES IN SCIENCE

Listed below are questions about the types of activities *that students in the target class* may engage in during science instruction. Please estimate the relative amount of time a typical student in your class will spend engaged in *each activity* over the course of a school year. The activities are not necessarily mutually exclusive; across activities, **your answers will probably exceed 100%**. Consider each activity on its own, estimating the range that best indicates the relative amount of science instructional time that a typical student in your target class engages in over the course of a school year for that category.

<i>AMOUNT OF INSTRUCTIONAL TIME</i>	
<b>0 - None</b>	
<b>1 - Little</b> ( <i>Less than 10% of instructional time for the school year</i> )	
<b>2 - Some</b> ( <i>10-25% of instructional time for the school year</i> )	
<b>3 - Moderate</b> ( <i>26-50% of instructional time for the school year</i> )	
<b>4 - Considerable</b> ( <i>More than 50% of instructional time for the school year</i> )	

<b>How much of the science instructional time in the target class do students use to engage in the following tasks?</b>	<b>None</b>	<b>Little</b>	<b>Some</b>	<b>Moderate</b>	<b>Considerable</b>
25 Listen to the teacher explain something about science to the class as a whole	①	②	③	④	⑤
26 Read about science in books, magazines, or articles ( <b>not</b> textbooks)	①	②	③	④	⑤
27 Work <i>individually</i> on science assignments	①	②	③	④	⑤
28 Write about science in a report or paper on science topics	①	②	③	④	⑤
29 Do a laboratory activity, investigation, or experiment	①	②	③	④	⑤
30 Watch the teacher demonstrate a scientific phenomenon	①	②	③	④	⑤
31 Collect data (other than laboratory activities)	①	②	③	④	⑤
32 Work in <i>pairs or small groups</i> (other than laboratory activities)	①	②	③	④	⑤
33 Do a science activity with the class <b>outside</b> the classroom or science laboratory (e.g., field trips or research)	①	②	③	④	⑤
34 Use computers, calculators, or other educational technology to learn science	①	②	③	④	⑤
35 Maintain and reflect on a science portfolio of their own science work	①	②	③	④	⑤
36 Take a quiz or test	①	②	③	④	⑤

Listed below are some questions (items 37-62) about what students in the target class do in science. For each activity pick one of the choices to indicate the percentage of instructional time that students spend doing each activity. Please think of an average student in the class while responding.

*AMOUNT OF INSTRUCTIONAL TIME (in laboratory activities, investigations ,or experiments)*

**0 - None**

**1 - Little** (*Less than 10% of instructional time in laboratory activities, investigations, or experiments*)

**2 - Some** (*10-25 % of instructional time in laboratory activities, investigations, or experiments*)

**3 - Moderate** (*26-50% of instructional time in laboratory activities, investigations, or experiments*)

**4 - Considerable** (*More than 50% of instructional time in laboratory activities, investigations, or experiments*)

<b>When students in the target class are engaged in <i>laboratory activities, investigations, or experiments</i> as part of science instruction, how much of that time do they:</b>	<b>None</b>	<b>Little</b>	<b>Some</b>	<b>Moderate</b>	<b>Considerable</b>
37 Make educated guesses, predictions, or hypotheses	①	②	③	④	⑤
38 Follow step-by-step directions	①	②	③	④	⑤
39 Use science equipment or measuring tools	①	②	③	④	⑤
40 Collect data	①	②	③	④	⑤
41 Change a variable in an experiment to test a hypothesis	①	②	③	④	⑤
42 Organize and display information in tables or graphs	①	②	③	④	⑤
43 Analyze and interpret science data	①	②	③	④	⑤
44 Design their own investigation or experiment to solve a scientific question	①	②	③	④	⑤
45 Make observations/classifications	①	②	③	④	⑤

*AMOUNT OF INSTRUCTIONAL TIME (in pairs or small groups)*

**0 - None**

**1 - Little** (*Less than 10% of instructional time in pairs or small groups*)

**2 - Some** (*10-25% of instructional time in pairs or small groups*)

**3 - Moderate** (*26-50% of instructional time in pairs or small groups*)

**4 - Considerable** (*More than 50% of instructional time in pairs or small groups*)

**When students in the target class work in *pairs or small groups* as part of science instruction (other than in the science laboratory), how much of that time do they:**

	None	Little	Some	Moderate	Considerable
46 Talk about ways to solve science problems (e.g., design an experiment)	①	①	②	③	④
47 Complete written assignments from the textbook or workbook	①	①	②	③	④
48 Write results or prepare a presentation from a laboratory activity, investigation, experiment, or a research project	①	①	②	③	④
49 Work on an assignment, report, or project over an extended period of time	①	①	②	③	④
50 Work on a writing project or entries for portfolios by seeking peer comments to improve work	①	①	②	③	④
51 Review assignments or prepare for a quiz or test	①	①	②	③	④

*AMOUNT OF INSTRUCTIONAL TIME (collecting science data or information)*

**0 - None**

**1 - Little** (*Less than 10% of instructional time collecting science data or information*)

**2 - Some** (*10-25% of instructional time collecting science data or information*)

**3 - Moderate** (*26-50% of instructional time collecting science data or information*)

**4 - Considerable** (*More than 50% of instructional time collecting science data or information*)

**When students in the target class *collect data or information* about science from books, magazines, computers, or other sources (other than laboratory activities), how much of that time do they:**

	None	Little	Some	Moderate	Considerable
52 Have class discussions about the data	①	①	②	③	④
53 Organize and display the information in tables or graphs	①	①	②	③	④
54 Make a prediction based on the data	①	①	②	③	④
55 Analyze and interpret the information or data orally or in writing	①	①	②	③	④
56 Make a presentation to the class on the data, analysis, or interpretation	①	①	②	③	④



**AMOUNT OF INSTRUCTIONAL TIME (using calculators, computers, or other educational technology)**

**0-None**

**1-Little** (*Less than 10% of instructional time using calculators, computers, or other educational technology*)

**2-Some** (*10-25% of instructional time using calculators, computers, or other educational technology*)

**3-Moderate** (*26-50% of instructional time using calculators, computers, or other educational technology*)

**4-Considerable** (*More than 50% of instructional time using calculators, computers, or other educational technology*)

**When students in the target class are engaged in activities that involve the use of *calculators, computers, or other educational technology* as part of science instruction, how much of that time do they:**

	<b>None</b>	<b>Little</b>	<b>Some</b>	<b>Moderate</b>	<b>Considerable</b>
57 Learn facts	①	①	②	③	④
58 Practice procedures	①	①	②	③	④
59 Use sensors and probes (e.g., CBLs)	①	①	②	③	④
60 Retrieve or exchange data or information (e.g., using the Internet or partnering with another class)	①	①	②	③	④
61 Display and analyze data	①	①	②	③	④
62 Solve problems using simulations	①	①	②	③	④

## ASSESSMENTS

For items 63-70, please indicate how often you use each of the following strategies when assessing students in the target science class.

	Never	1 - 4 times per <u>year</u>	1 - 3 times per <u>month</u>	1 - 3 times per <u>week</u>	4 - 5 times per <u>week</u>
63 Objective items (e.g., multiple choice, true/false)	①	②	③	④	⑤
64 Short answer (e.g., fill-in-the-blank)	①	②	③	④	⑤
65 Extended response item for which student must explain or justify solution	①	②	③	④	⑤
66 Performance tasks or events (e.g., hands-on activities)	①	②	③	④	⑤
67 Individual or group demonstration or presentation	①	②	③	④	⑤
68 Science projects	①	②	③	④	⑤
69 Portfolios	①	②	③	④	⑤
70 Systematic observation of students	①	②	③	④	⑤

## INSTRUCTIONAL INFLUENCES

For items 71-80, please indicate the degree to which each of the following influences what you teach in the target science class.

	Not Applicable	Strong Negative Influence	Somewhat Negative Influence	Little or No Influence	Somewhat Positive Influence	Strong Positive Influence
71 Your state's curriculum framework or content standards	①	②	③	④	⑤	⑥
72 Your district's curriculum framework, standards, or guidelines	①	②	③	④	⑤	⑥
73 Textbook or instructional materials	①	②	③	④	⑤	⑥
74 State tests or results from test	①	②	③	④	⑤	⑥
75 District tests or results from test	①	②	③	④	⑤	⑥
76 National science education standards	①	②	③	④	⑤	⑥
77 Your pre-service preparation	①	②	③	④	⑤	⑥
78 Students' special needs	①	②	③	④	⑤	⑥
79 Parental or community preferences	①	②	③	④	⑤	⑥
80 Preparation of students for the next grade or level	①	②	③	④	⑤	⑥

## CLASSROOM INSTRUCTIONAL READINESS

For items 81-90, please indicate how well prepared you are to:

	Not Well Prepared	Somewhat Prepared	Well Prepared	Very Well Prepared
81 Teach science at your assigned level	①	②	③	④
82 Integrate science with other subjects	①	②	③	④
83 Provide science instruction that meets science content standards (e.g., district, state, national)	①	②	③	④
84 Use a variety of assessment strategies (including objective and open-ended formats)	①	②	③	④
85 Manage a class of students engaged in hands-on or laboratory activities	①	②	③	④
86 Take into account students' prior conceptions about natural phenomena when planning	①	②	③	④
87 Teach students with physical disabilities	①	②	③	④
88 Teach classes composed of students with diverse abilities	①	②	③	④
89 Teach science to students from a variety of cultural backgrounds	①	②	③	④
90 Teach science to students who have limited English proficiency	①	②	③	④

## TEACHER OPINIONS AND BELIEFS

For items 91-100, please indicate your opinion about each of the statements below:

	Strongly Disagree	Disagree	Neutral/Undecided	Agree	Strongly Agree
91 Laboratory-based science classes are more effective than non-laboratory classes.	①	②	③	④	⑤
92 It is important for students to learn basic scientific terms and formulas before learning underlying concepts and principles.	①	②	③	④	⑤
93 I am supported by colleagues to try out new ideas in teaching science.	①	②	③	④	⑤
94 I am required to follow rules at this school that conflict with my best professional judgment about teaching and learning science.	①	②	③	④	⑤
95 Science teachers in this school regularly observe each other teaching classes.	①	②	③	④	⑤
96 Science teachers in this school trust each other.	①	②	③	④	⑤
97 It's OK in this school to discuss feelings, worries, and frustrations with other science teachers.	①	②	③	④	⑤
98 Science teachers respect other teachers who take the lead in school improvement efforts.	①	②	③	④	⑤
99 It's OK in this school to discuss feelings, worries, and frustrations with the leadership staff.	①	②	③	④	⑤
100 The leadership staff takes personal interest in the professional development of the teachers.	①	②	③	④	⑤

## PROFESSIONAL DEVELOPMENT ACTIVITIES IN SCIENCE

In answering the following items, consider all the professional development activities related to science content or science education that you have participated in **since June 1st of last year**. Professional development refers to a variety of activities intended to enhance your professional knowledge and skills, including in-service training, teacher networks, course work, institutes, committee work, and mentoring. In-service training is professional development offered by your school or district to enhance your professional responsibilities and knowledge. Workshops are short- term learning opportunities that can be located in your school or elsewhere. Institutes are longer term professional learning opportunities, for example, of a week or longer in duration.

How Often?					How many hours?				
Ⓐ Never	Ⓒ 3-4 times	Ⓐ N/A	Ⓒ 16-35		Ⓐ N/A	Ⓒ 16-35			
Ⓑ Once	Ⓓ 5-10 times	Ⓑ 1-6 hrs.	Ⓓ 36-60		Ⓑ 1-6 hrs.	Ⓓ 36-60			
Ⓒ Twice	Ⓔ >10 times	Ⓒ 7-15 hrs.	Ⓔ 61+ hrs.		Ⓒ 7-15 hrs.	Ⓔ 61+ hrs.			

- 101 For the time period referenced above, how often, and for how many total hours, have you participated in *workshops* or *in-service training* related to science or science education?      Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ      Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
- 102 For the time period referenced above, how often, and for how many total hours, have you participated in *summer institutes* related to science or science education?      Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ      Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
- 103 For the time period referenced above, how often have you attended *college courses* related to science or science education and about how many hours did you spend in class?      Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ      Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

Since June 1st of last year, how frequently have you engaged in each of the following activities related specifically to the teaching and learning of science?

- |  | Never | Once or twice a <u>year</u> | Once or twice a <u>term</u> | Once or twice a <u>month</u> | Once or twice a <u>week</u> | Almost <u>daily</u> |
|--|-------|-----------------------------|-----------------------------|------------------------------|-----------------------------|---------------------|
| 104 Attended conferences related to science or science education   | Ⓐ     | Ⓑ                           | Ⓒ                           | Ⓓ                            | Ⓔ                           | Ⓕ                   |
| 105 Participated in teacher study groups   | Ⓐ     | Ⓑ                           | Ⓒ                           | Ⓓ                            | Ⓔ                           | Ⓕ                   |
| 106 Participated in teacher networks or collaboratives of teachers supporting professional development   | Ⓐ     | Ⓑ                           | Ⓒ                           | Ⓓ                            | Ⓔ                           | Ⓕ                   |
| 107 Acted as a coach or mentor to other teachers or staff in your school   | Ⓐ     | Ⓑ                           | Ⓒ                           | Ⓓ                            | Ⓔ                           | Ⓕ                   |
| 108 Received coaching or mentoring   | Ⓐ     | Ⓑ                           | Ⓒ                           | Ⓓ                            | Ⓔ                           | Ⓕ                   |
| 109 Participated in a committee or task force focused on curriculum and instruction  | Ⓐ     | Ⓑ                           | Ⓒ                           | Ⓓ                            | Ⓔ                           | Ⓕ                   |
| 110 Engaged in informal self-directed learning (e.g., discussed science or science education topics with a colleague, read a journal article on science or science education, or used the Internet to enrich knowledge and skills) | Ⓐ     | Ⓑ                           | Ⓒ                           | Ⓓ                            | Ⓔ                           | Ⓕ                   |

**Thinking again about all of your professional development activities in science or science education since June 1st of last year, how often has the following occurred for you?**

	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>
111 Observed demonstrations of teaching techniques	①	②	③	④
112 Led group discussions	①	②	③	④
113 Developed curricula or lesson plans that other participants or the activity leader reviewed	①	②	③	④
114 Reviewed student work or scored assessments	①	②	③	④
115 Developed assessments or tasks as part of a formal professional development activity	①	②	③	④
116 Practiced what you learned and received feedback as part of a professional development activity	①	②	③	④
117 Received coaching or mentoring in the classroom	①	②	③	④
118 Given a lecture or presentation to colleagues	①	②	③	④

**Still thinking about all your professional development activities since June 1st of last year, indicate how often they have been:**

	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>
119 Designed to support the school-wide improvement plan adopted by your school	①	②	③	④
120 Consistent with your science department or grade-level plan to improve teaching	①	②	③	④
121 Consistent with your own goals for your professional development	①	②	③	④
122 Built on what you had learned in earlier professional development activities	①	②	③	④
123 Provided follow-up activities that related clearly to what you learned	①	②	③	④

**Since June 1st of last year, have you participated in professional development activities in science or science education in the following ways?**

	<b>No</b>	<b>Yes</b>
124 I participated in professional development activities with most or all of the teachers from my school.	①	②
125 I participated in professional development activities with most or all of the teachers from my department or grade level.	①	②
126 I participated in professional development activities <i>NOT</i> attended by other staff members from my school.	①	②
127 I discussed what I learned with other teachers in my school or department who did <i>NOT</i> attend the activity.	①	②

**Since June 1st of last year, how much emphasis did your professional development activities in science or science education place on the following topics?**

	<b>None</b>	<b>Minor</b>	<b>Moderate</b>	<b>Major</b>
128 State science content standards (e.g., what they are and how they are used)	①	②	③	④
129 Alignment of science instruction to curriculum	①	②	③	④
130 Instructional approaches (e.g., use of manipulatives)	①	②	③	④
131 In-depth study of science or specific concepts within science (e.g., earth science)	①	②	③	④
132 Study of how children learn particular topics in science	①	②	③	④
133 Individual differences in student learning	①	②	③	④
134 Meeting the learning needs of special populations of students (e.g., English language learners and students with disabilities)	①	②	③	④
135 Classroom science assessment (e.g., diagnostic approaches, textbook-developed tests, or teacher-developed tests)	①	②	③	④
136 State or district science assessment (e.g., preparing, understanding, or interpreting assessment data)	①	②	③	④
137 Interpretation of assessment data for use in science instruction	①	②	③	④
138 Technology to support student learning in science	①	②	③	④

## TEACHER CHARACTERISTICS

- |     |   |   |  |                             |   |   |   |                    |
|-----|---|---|--|-----------------------------|---|---|---|--------------------|
|     |   | Female  | Male                                     |                             |   |   |   |                    |
| 139 | Please indicate your gender.  | ①   | ①  |                             |   |   |   |                    |
| 140 | Please indicate your ethnicity/race.<br>(Indicate all that apply)   | ①   | ②  | ③                           | ④   | ⑤   | ⑥   |                    |
|     |   | American Indian or Alaska Native                  | Asian                                    | Black or African American   | Hispanic or Latino/a  | Native Hawaiian or Other Pacific Islander | White   |                    |
|     |   | Less than 1 year                                  | 1 - 2 years                              | 3 - 5 years                 | 6 - 8 years   | 9 - 11 years                              | 12 - 15 years   | More than 15 years |
| 141 | How many years have you taught science prior to this year?  | ①   | ②  | ③                           | ④   | ⑤   | ⑥   |                    |
| 142 | How long have you been assigned to teach at your current school?  | ①   | ②  | ③                           | ④   | ⑤   | ⑥   |                    |
|     |   | Does not apply                                    | BA or BS                                 | MA or MS                    | Multiple MA or MS   | Ph.D. or Ed.D.                            | Other   |                    |
| 143 | What is the highest degree you hold?  | ①   | ②  | ③                           | ④   | ⑤   |   |                    |
| 144 | What was your major field of study for the bachelor's degree?   | ①   | ②  | ③                           | ④   | ⑤   | ⑥   |                    |
|     |   | Elementary Education                              | Middle School Education                  | Science Education           | Science   | Science Education <b>and</b> Science      | Other Disciplines (includes other Education fields, Math, History, English, Foreign Languages, etc.)        |                    |
| 145 | <b>If applicable</b> , what was your <b>major field</b> of study for the <b>highest degree you hold</b> beyond a bachelor's degree? | ①   | ②  | ③                           | ④   | ⑤   | ⑥   |                    |
|     |   | Elementary Education                              | Middle School Education                  | Science Education           | Science   | Science Education <b>and</b> Science      | Other Disciplines (includes other Education fields, Mathematics, History, English, Foreign Languages, etc.) |                    |
| 146 | What type(s) of state certification do you currently have? (Indicate all that apply)  | ①   | ②  | ③                           | ④   | ⑤   | ⑥   |                    |
|     |   | Emergency, provisional or temporary certification | Elementary/Early Childhood Certification | Middle School Certification | Secondary Certification, in a field <b>other</b> than science | Secondary Science Certification           | National Board Certification  |                    |

## FORMAL COURSE PREPARATION

Please estimate the total number of *quarter or semester courses* you have taken at the undergraduate and/or graduate level in each of the following areas:

	(Number of courses)									
	0	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17+
147 Biology/Life Science	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
148 Physics/Chemistry/Physical Science	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
149 Geology/Astronomy/Earth Science	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
150 Science Education	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

**This is the end of the Instructional Practices portion of the survey. Please continue on to complete the Instructional Content portion. Thank you.**



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## **SURVEYS OF ENACTED CURRICULUM<sup>®</sup>**

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### **Survey Of Instructional Content**

#### **Teacher Survey**

#### **Grades K-12**

#### **Science**

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The following pages request information regarding topic coverage and your expectations for students in the target science class for **the most recent school year (current year if reporting after March 1st)**. The content matrix that follows contains lists of discrete topics associated with science instruction. The categories and the level of specificity are intended to gather information about content across a wide variety of programs. It is not intended to reflect any recommended or prescribed content for the grade level and may or may not be reflective of your local curriculum.

**Please read the instructions on the next two pages carefully before proceeding.**

## Step 1: Indicate topics not covered in this class

Begin by reviewing the entire list of topics identified in the topics column of each table, noting how topics are grouped. After reviewing each topic within a given grouping, if none of the topics listed within that group receive any instructional coverage, circle the "<None>" in the "Time on Topic" column for that group. For any individual topic that is not covered in this science class, fill in the circled "zero" in the "Time on Topic" column. (Not necessary for those groups with "<None>" circled.) Any topics or topic group so identified will not require further response. [Note, for example, that the class described in the example below did not cover any topics under "Kinetics" and so "<None>" is circled.]

## Step 2: Indicate the amount of time spent on each topic covered in this class

Examine the list of topics a second time. This time note the amount of coverage devoted to each topic by filling in the appropriately numbered circle in the "Time on Topic" column based upon the following codes:

**0 = None, not covered**

**1 = Slight Coverage** (less than one class/lesson)

**2 = Moderate Coverage** (one to five classes/lessons)

**3 = Sustained Coverage** (more than five classes/lessons)

Step 1

Step 2

<i>Time on Topic</i>	<i>K-12 Science Topics</i>	<i>Expectations for Students in Science</i>				
		Memorize Facts/Definitions/Formulas	Conduct Investigations/Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/Make Connections
<none>	1	<b>Energy</b>				
0 1 ● 3	101	Potential energy	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
● 1 2 3	102	Kinetic energy	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 ● 3	103	Work and force	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
● 1 2 3	104	Conservation of energy	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 ● 3	105	Heat energy and transfer	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<b>0</b>	6	<b>Kinetics</b>				
0 1 2 3	601	Nuclear energy	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	602	Pressure	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	603	Kinetics and temperature	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3

### Step 3: Indicate relative emphasis of each student expectation for every topic taught

The final step in completing this section of the survey concerns your expectations for what students should know and be able to do. For each topic area, please provide information about the relative amount of instructional time spent on work designed to help students reach each of the listed expectations by filling in the appropriately numbered circle using the response codes listed below. (Note: To the left of each content sheet you will find a list of descriptors for each of the five expectations for students.)

- 0 = No emphasis** (Not an expectation for this topic)
- 1 = Slight emphasis** (Accounts for less than 25% of the time spent on this topic)
- 2 = Moderate emphasis** (Accounts for 25% to 33% of the time spent on this topic)
- 3 = Sustained emphasis** (Accounts for more than 33% of the time spent on this topic)

**Note:** A code of "3" should typically be given for only one, and no more than two expectation categories within any given topic. No expectation codes should be filled-in for those topics for which no coverage is provided (i.e., circled "0" or "<None>").

### Step 3

<i>Time on Topic</i>	<i>K-12 Science Topics</i>	<i>Expectations for Students in Science</i>					
<b>&lt;none&gt;</b>	<b>1</b>	<b>Energy</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
①①●③	101	Potential energy	①①●③	①①●③	①①●③	①●②③	①●②③
●①②③	102	Kinetic energy	①①②③	①①②③	①①②③	①①②③	①①②③
①①②●	103	Work and force	①①②●	①①●③	●①②③	①●②③	①●②③
●①②③	104	Conservation of energy	①①②③	①①②③	①①②③	①①②③	①①②③
①①●③	105	Heat energy and transfer	①①●③	●①②③	●①②③	①①②●	①①●③
<b>&lt;none&gt;</b>	<b>6</b>	<b>Kinetics</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
①①②③	601	Nuclear energy	①①②③	①①②③	①①②③	①①②③	①①②③
①①②③	602	Pressure	①①②③	①①②③	①①②③	①①②③	①①②③
①①②③	603	Kinetics and temperature	①①②③	①①②③	①①②③	①①②③	①①②③

# Expectations for Students in Science

## Memorize Facts/Definitions/ Formulas

---

- Recite basic science facts
- Recall science terms and definitions
- Recall scientific formulas

## Conduct Investigations/ Perform Procedures

---

- Make observations
- Collect and record data
- Use appropriate tools
- Make measurements and do computations
- Execute procedures
- Test effects of different variables

## Communicate Understanding of Science Concepts

---

- Explain concepts
- Observe and explain teacher demonstrations
- Explain procedures and methods of science and inquiry
- Organize and display data in tables or charts

## Analyze Information

---

- Classify and compare data
- Analyze data and recognize patterns
- Generate questions and make predictions
- Infer from data
- Draw conclusions

## Apply Concepts/Make Connections

---

- Use and integrate science concepts
- Apply and adapt science information to real-world situations
- Build or revise theory
- Apply science ideas outside the context of science

---

### Response Codes Time on Topic

---

- 0 = None**  
(Not covered)
- 1 = Slight coverage**  
(Less than one class/lesson)
- 2 = Moderate coverage**  
(One to five classes/lessons)
- 3 = Sustained coverage**  
(More than five classes/lessons)

---

### Response Codes Expectations for Students

---

- 0 = No emphasis**  
(Not a performance goal for this topic)
- 1 = Slight emphasis**  
(Less than 25% of time on this topic)
- 2 = Moderate emphasis**  
(25% to 33% of time on this topic)
- 3 = Sustained emphasis**  
(More than 33% of time on this topic)



**Time on Topic**

**Grades K-12 Science Topics**

**Expectations for Students in Science**

<none>	100	Nature of Science	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	101	Nature and structure of science	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	102	Nature of scientific inquiry/method	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	103	Scientific habits of mind, logic, and reasoning	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	104	Issues of diversity, culture, and gender in science	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	105	History of scientific innovations	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	106	Ethical issues and critiques of science	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	200	Science & Technology	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	201	Technological benefits, trade-offs, and consequences	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	202	Relationship between scientific inquiry and technological design	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	203	Science tools and lab safety	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	204	Design or implement a solution or product	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	300	Science, Health & Environment	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	301	Personal health, behavior, disease, and nutrition	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	302	Environmental health, pollution, and waste disposal	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	303	Acid rain	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	304	Ozone depletion	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	305	Resources and conservation	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	306	Toxic and nuclear waste	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	307	Greenhouse effect	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	308	Natural and human-caused hazards	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	400	Measurement & Calculation in Science	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	401	The International System	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	402	Mass and weight	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	403	Length	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	404	Volume	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	405	Time	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	406	Temperature	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	407	Accuracy and precision/estimation	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	408	Significant digits	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	409	Derived units (e.g., rate, speed)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	410	Conversion factors	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	411	Density	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	412	Data displays (e.g., tables, charts, maps, graphs)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3

# Expectations for Students in Science

## Memorize Facts/Definitions/ Formulas

---

- Recite basic science facts
- Recall science terms and definitions
- Recall scientific formulas

## Conduct Investigations/ Perform Procedures

---

- Make observations
- Collect and record data
- Use appropriate tools
- Make measurements and do computations
- Execute procedures
- Test effects of different variables

## Communicate Understanding of Science Concepts

---

- Explain concepts
- Observe and explain teacher demonstrations
- Explain procedures and methods of science and inquiry
- Organize and display data in tables or charts

## Analyze Information

---

- Classify and compare data
- Analyze data and recognize patterns
- Generate questions and make predictions
- Infer from data
- Draw conclusions

## Apply Concepts/Make Connections

---

- Use and integrate science concepts
- Apply and adapt science information to real-world situations
- Build or revise theory
- Apply science ideas outside the context of science

---

### Response Codes Time on Topic

---

- 0 = None**  
(Not covered)
- 1 = Slight coverage**  
(Less than one class/lesson)
- 2 = Moderate coverage**  
(One to five classes/lessons)
- 3 = Sustained coverage**  
(More than five classes/lessons)

---

### Response Codes Expectations for Students

---

- 0 = No emphasis**  
(Not a performance goal for this topic)
- 1 = Slight emphasis**  
(Less than 25% of time on this topic)
- 2 = Moderate emphasis**  
(25% to 33% of time on this topic)
- 3 = Sustained emphasis**  
(More than 33% of time on this topic)

## Time on Topic

## Grades K-12 Science Topics

## Expectations for Students in Science

<none>	500	Components of Living Systems	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	501	Cell structure/function	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	502	Cell theory	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	503	Transport of cellular material	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	504	Cell metabolism	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	505	Cell response	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	506	Cellular respiration	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	507	Cell specialization	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	508	Organs	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	509	Organ systems	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	510	Microbiology	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	600	Biochemistry	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	601	Living elements (C, H, O, N, P)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	602	Atomic structure and bonding	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	603	Synthesis reactions (proteins)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	604	Hydrolysis	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	605	Organic compounds (e.g., carbon, proteins, nucleic/amino acids, enzymes)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	700	Botany	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	701	Nutrition and photosynthesis	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	702	Circulation	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	703	Respiration	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	704	Growth/development/behavior	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	705	Health and disease	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	706	Structure and function	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	800	Animal Biology	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	801	Nutrition	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	802	Circulation	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	803	Excretion	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	804	Respiration	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	805	Growth/development/behavior	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	806	Health and disease	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	807	Structure and function	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	808	Skeletal and muscular systems	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	809	Nervous and endocrine systems	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	810	Habitat	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3

# Expectations for Students in Science

## Memorize Facts/Definitions/ Formulas

---

- Recite basic science facts
- Recall science terms and definitions
- Recall scientific formulas

## Conduct Investigations/ Perform Procedures

---

- Make observations
- Collect and record data
- Use appropriate tools
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- Test effects of different variables

## Communicate Understanding of Science Concepts

---

- Explain concepts
- Observe and explain teacher demonstrations
- Explain procedures and methods of science and inquiry
- Organize and display data in tables or charts

## Analyze Information

---

- Classify and compare data
- Analyze data and recognize patterns
- Generate questions and make predictions
- Infer from data
- Draw conclusions

## Apply Concepts/Make Connections

---

- Use and integrate science concepts
- Apply and adapt science information to real-world situations
- Build or revise theory
- Apply science ideas outside the context of science

---

### Response Codes Time on Topic

---

- 0 = None**  
(Not covered)
- 1 = Slight coverage**  
(Less than one class/lesson)
- 2 = Moderate coverage**  
(One to five classes/lessons)
- 3 = Sustained coverage**  
(More than five classes/lessons)

---

### Response Codes Expectations for Students

---

- 0 = No emphasis**  
(Not a performance goal for this topic)
- 1 = Slight emphasis**  
(Less than 25% of time on this topic)
- 2 = Moderate emphasis**  
(25% to 33% of time on this topic)
- 3 = Sustained emphasis**  
(More than 33% of time on this topic)

**Time on Topic**

**Grades K-12 Science Topics**

**Expectations for Students in Science**

<none>	900	<b>Human Biology</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
Ⓐ Ⓑ Ⓒ Ⓓ	901	Nutrition and digestive system	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	902	Circulatory system and blood	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	903	Excretory system	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	904	Respiration and respiratory system	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	905	Growth/development/behavior	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	906	Health and disease/immune system	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	907	Skeletal and muscular systems	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	908	Nervous and endocrine systems	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
<none>	1000	<b>Genetics</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
Ⓐ Ⓑ Ⓒ Ⓓ	1001	Mendelian genetics	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1002	Modern genetics	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1003	Inherited diseases	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1004	Biotechnology	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1005	Human genetics	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1006	Transcription and translation	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1007	Mutation	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
<none>	1100	<b>Evolution</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
Ⓐ Ⓑ Ⓒ Ⓓ	1101	Evidence for evolution	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1102	Lamarckian theories	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1103	Modern evolutionary theory	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1104	Life origin theories	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1105	Human evolution	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1106	Classification	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1107	Causes	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1108	Natural selection	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
<none>	1200	<b>Reproduction and Development</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
Ⓐ Ⓑ Ⓒ Ⓓ	1201	Mitotic and meiotic cell division	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1202	Asexual reproduction	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1203	Inherited traits	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1204	Reproduction and development in plants	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1205	Reproduction and development in animals	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1206	Reproduction and development in humans	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ

# Expectations for Students in Science

## Memorize Facts/Definitions/ Formulas

---

- Recite basic science facts
- Recall science terms and definitions
- Recall scientific formulas

## Conduct Investigations/ Perform Procedures

---

- Make observations
- Collect and record data
- Use appropriate tools
- Make measurements and do computations
- Execute procedures
- Test effects of different variables

## Communicate Understanding of Science Concepts

---

- Explain concepts
- Observe and explain teacher demonstrations
- Explain procedures and methods of science and inquiry
- Organize and display data in tables or charts

## Analyze Information

---

- Classify and compare data
- Analyze data and recognize patterns
- Generate questions and make predictions
- Infer from data
- Draw conclusions

## Apply Concepts/Make Connections

---

- Use and integrate science concepts
- Apply and adapt science information to real-world situations
- Build or revise theory
- Apply science ideas outside the context of science

---

### Response Codes Time on Topic

---

- 0 = None**  
(Not covered)
- 1 = Slight coverage**  
(Less than one class/lesson)
- 2 = Moderate coverage**  
(One to five classes/lessons)
- 3 = Sustained coverage**  
(More than five classes/lessons)

---

### Response Codes Expectations for Students

---

- 0 = No emphasis**  
(Not a performance goal for this topic)
- 1 = Slight emphasis**  
(Less than 25% of time on this topic)
- 2 = Moderate emphasis**  
(25% to 33% of time on this topic)
- 3 = Sustained emphasis**  
(More than 33% of time on this topic)

**Time on Topic**

**Grades K-12 Science Topics**

**Expectations for Students in Science**

<none>	1300	Ecology	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
Ⓐ Ⓑ Ⓒ Ⓓ	1301	Food webs/chains	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1302	Competition and cooperation	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1303	Energy flow relationships	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1304	Biotic and abiotic factors	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1305	Ecological succession	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1306	Ecosystems	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1307	Population dynamics	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1308	Environmental chemistry	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1309	Adaptation and variation	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1310	Niche populations	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
<none>	1400	Energy	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
Ⓐ Ⓑ Ⓒ Ⓓ	1401	Potential energy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1402	Kinetic energy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1403	Conservation of mass/energy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1404	Heat energy and transfer	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1405	Light energy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1406	Sound energy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1407	Laws of thermodynamics and entropy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1408	Work and energy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1409	Mechanical energy and machines	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1410	Nuclear energy	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
<none>	1500	Motion and Forces	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
Ⓐ Ⓑ Ⓒ Ⓓ	1501	Vector and scalar quantities	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1502	Displacement as a vector quantity	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1503	Velocity as a vector quantity	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1504	Relative position and velocity	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1505	Acceleration	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1506	Newton's First Law	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1507	Newton's Second Law	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1508	Newton's Third Law	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1509	Momentum, impulse, and conservation	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1510	Equilibrium	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1511	Friction	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ
Ⓐ Ⓑ Ⓒ Ⓓ	1512	Universal gravitation	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ	Ⓐ Ⓑ Ⓒ Ⓓ

# Expectations for Students in Science

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Time on Topic		Grades K-12 Science Topics	Expectations for Students in Science				
<none>	1600	<b>Electricity</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
⓪ ① ② ③	1601	Static electricity (production, transfer, distribution)	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1602	Coulomb's law	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1603	Electric fields	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1604	Current electricity	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1605	Current, voltage, and resistance	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1606	Series and parallel circuits	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1607	Magnetism	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1608	Effects of interacting fields	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1609	Conductors and insulators	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
<none>	1700	<b>Waves</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
⓪ ① ② ③	1701	Characteristics and behavior	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1702	Visible light (direction/speed/transformation)	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1703	Non-visible light/electromagnetic spectrum (e.g., ultraviolet, infrared)	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1704	Sound (e.g. direction, speed, transformation)	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1705	Earthquakes, tsunamis, ocean waves	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
<none>	1800	<b>Kinetics and Equilibrium</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
⓪ ① ② ③	1801	Molecular motion	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1802	Pressure	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1803	Kinetics and temperature	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1804	Equilibrium	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1805	Reaction rates	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
<none>	1900	<b>Properties of Matter</b>	<b>Memorize Facts/ Definitions/ Formulas</b>	<b>Conduct Investigations/ Perform Procedures</b>	<b>Communicate Understanding of Science Concepts</b>	<b>Analyze Information</b>	<b>Apply Concepts/ Make Connections</b>
⓪ ① ② ③	1901	Characteristics and composition	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1902	Elements, molecules, and compounds	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1903	States of matter (S-L-G-P)	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1904	Solutions and mixtures	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1905	Physical and chemical changes	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1906	Physical and chemical properties	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1907	Isotopes, atomic number, and atomic mass	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1908	Photons and spectra	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1909	Atomic theory	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③
⓪ ① ② ③	1910	Quantum theory and electron clouds	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③	⓪ ① ② ③

# Expectations for Students in Science

## Memorize Facts/Definitions/ Formulas

---

- Recite basic science facts
- Recall science terms and definitions
- Recall scientific formulas

## Conduct Investigations/ Perform Procedures

---

- Make observations
- Collect and record data
- Use appropriate tools
- Make measurements and do computations
- Execute procedures
- Test effects of different variables

## Communicate Understanding of Science Concepts

---

- Explain concepts
- Observe and explain teacher demonstrations
- Explain procedures and methods of science and inquiry
- Organize and display data in tables or charts

## Analyze Information

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- Classify and compare data
- Analyze data and recognize patterns
- Generate questions and make predictions
- Infer from data
- Draw conclusions

## Apply Concepts/Make Connections

---

- Use and integrate science concepts
- Apply and adapt science information to real-world situations
- Build or revise theory
- Apply science ideas outside the context of science

---

### Response Codes Time on Topic

---

- 0 = None**  
(Not covered)
- 1 = Slight coverage**  
(Less than one class/lesson)
- 2 = Moderate coverage**  
(One to five classes/lessons)
- 3 = Sustained coverage**  
(More than five classes/lessons)

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### Response Codes Expectations for Students

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(Not a performance goal for this topic)
- 1 = Slight emphasis**  
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**Time on Topic**

**Grades K-12 Science Topics**

**Expectations for Students in Science**

<none>	2000	Earth Systems	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
① ② ③	2001	Earth's shape, dimension, and composition	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2002	Earth's origins and history	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2003	Maps, locations, and scales	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2004	Measuring using relative and absolute time	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2005	Mineral and rock formations and types	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2006	Erosion and weathering	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2007	Plate tectonics	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2008	Formation of volcanoes, earthquakes, and mountains	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2009	Topography	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2010	Dynamics and energy transfer	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2011	Oceanography	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
<none>	2100	Astronomy	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
① ② ③	2101	Stars	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2102	Galaxies	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2103	Origins of the universe	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2104	Asteroids and comets	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2105	The solar system	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2106	The moon	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2107	The Earth's motion: rotation and revolution	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2108	Relationship of Earth, moon, and sun	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2109	Location, navigation, and time	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
<none>	2200	Meteorology	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
① ② ③	2201	Earth's atmosphere	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2202	Air pressure and winds	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2203	Evaporation, condensation, and precipitation	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2204	Weather	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2205	Climate	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
<none>	2300	Elements and The Periodic System	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
① ② ③	2301	Early classification system(s)	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2302	Modern periodic table	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2303	Interaction of elements	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③
① ② ③	2304	Element characteristics (families and periods)	① ② ③	① ② ③	① ② ③	① ② ③	① ② ③

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## Time on Topic

## Grades K-12 Science Topics

## Expectations for Students in Science

<none>	2400	Chemical Formulas and Reactions	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	2401	Names, symbols, and formulas	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2402	Molecular and empirical formulas	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2403	Representing chemical change	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2404	Balancing chemical equations	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2405	Stoichiometric relationships	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2406	Oxidation/reduction reactions	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2407	Chemical bonds	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2408	Electrochemistry	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2409	The Mole	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2410	Types of reactions	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	2500	Acids, Bases, and Salts	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	2501	Arrhenius/Bronsted-Lowry/Lewis Theories	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2502	Naming acids	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2503	Acid/base behavior and strengths	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2504	Salts	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2505	pH	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2506	Hydrolysis	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2507	Buffers	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2508	Indicators	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2509	Titration	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	2600	Organic Chemistry	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	2601	Hydrocarbons, alkenes, alkanes, and alkynes	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2602	Aromatic hydrocarbons	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2603	Isomers and polymers	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2604	Aldehydes, ether, ketones, esters, alcohols, and organic acids	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2605	Organic reactions	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2606	Carbohydrates, proteins, and lipids	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
<none>	2700	Nuclear Chemistry	Memorize Facts/ Definitions/ Formulas	Conduct Investigations/ Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts/ Make Connections
0 1 2 3	2701	Nuclear structure	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2702	Nuclear equations	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2703	Fission	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2704	Radioactivity	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2705	Half-life	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
0 1 2 3	2706	Fusion	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3

**Thank you for your participation in this survey.**





Please provide the following information:  
(Note: Your personal information will be kept confidential.)

Name: \_\_\_\_\_

Email address: \_\_\_\_\_  
(required for on-line access to individual results)

District: \_\_\_\_\_

School: \_\_\_\_\_

Date: \_\_\_\_\_

Providing your name and email address will allow you to gain access to your individual results along with results for your school and/or district.