

Please provide the following information:

(Note: Your personal information will be kept confidential.)

Name: _____

Home address: _____

City: _____ State: _____ Zipcode: _____

Home phone: _____

Email address: _____

(required for on-line access to individual results)

District: _____

School: _____

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.

Council of Chief State School Officers
Wisconsin Center for Education Research

SURVEYS OF ENACTED CURRICULUM ©

Teacher Survey For High School Science

Thank you for agreeing to participate in this survey on science and mathematics instruction. The enclosed survey is part of a collaborative effort to provide education policymakers, administrators, and most importantly, teachers like yourself with comparative information about mathematics and science instruction in districts participating in the Mathematics and Science Partnership Program. To learn more about the surveys of enacted curriculum and their use in other projects, please visit the project website; <http://www.ccsso.org/sec.html>

Your participation in this survey is voluntary. If you choose to participate, all of your responses will be kept confidential. No one outside of the research team will have access to your responses, nor will any individual responses be shared with staff in your school, district or state. No individuals will be identified in any of the reports. 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.

The following pages request information regarding students in the target Science class for the 2003-2004 school year (last school year).

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.

SCHOOL DESCRIPTION

1 Which of these categories best describes the way classes at this school are organized?

- ① Departmentalized Instruction
- ② Taught by Subject Area Specialist (non-departmental)
- ③ Self-contained
- ④ Team taught

2 If your school is departmentalized, or you are a subject area specialist, how many different Science courses do you currently teach?

- ① ② ③ ④ ⑤ ⑥ ⑦
(Number of courses taught)

TARGET CLASS DESCRIPTION

Selecting the Target Class-- For all questions about instructional content and 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

3 Which term best describes the target class, or course, you are teaching?

- ① Other
- ② Elem..Middle. Sch Sci.
- ③ General Science
- ④ Life Science
- ⑤ Physical Science
- ⑥ Earth Science
- ⑦ Biology
- ⑧ Chemistry
- ⑨ Physics
- ⑩ Coordinated/Integrated

4 Indicate the grade level of the majority of 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 less
- ② 11 to 15
- ③ 16 to 20
- ④ 21 to 25
- ⑤ 26 to 30
- ⑥ 31 or more

- 6 What percentage of the students in the target class are **female**? (Estimate to the nearest ten percent.)
- 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? (Estimate to the nearest ten percent.)
- 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?*
- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
(Number of instructional hours)
- 9 What is the average length of each class period for this targeted Science class?
- ① Not applicable ④ 51 to 60 minutes
② 30 to 40 minutes ⑤ 61 to 90 minutes
③ 41 to 50 minutes ⑥ 91 to 120 minutes
③ Varies due to block scheduling or integrated instruction
- 10 How many weeks total will the target Science class/course meet for this school year?
- ① ② ③
- Total # weeks =** 1 to 12 13 to 24 25 to 36
- 11 Estimate the achievement level of the majority of students in the target class, based on national standards.
- ① High Achievement Levels
② Average Achievement Levels
③ Low Achievement Levels
④ Mixed Levels of Achievement
- 12 What percentage of students in the target class are Limited English Proficient (LEP)? (Estimate to the nearest ten percent.)
- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
Less than 10 10 20 30 40 50 60 70 80 90+ %
- 13 What is considered most in scheduling students into this class?
- ① Ability or Achievement ③ Parent Request
② Limited English Proficiency ④ No one factor more than another
③ Teacher Recommendation ⑤ Student selects

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** which 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 groups so identified will not require further response. [Note, for example, that the class described in the example below did not cover any topics under “Science and Technology” and so “<none>” is circled.]

Step 2; Indicate 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 2

| Time on Topic | Middle School Science | Expectations for Students in Science | | | | |
|---------------|--|---------------------------------------|---|---|---------------------|---------------------------------|
| <none> | Nature of Science | Memorize Facts, Definitions, Formulas | Perform Procedures/Conduct Investigations | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ② ③ | 201 Scientific habits of mind (e.g. reasoning, evidence-based conclusions, skepticism) | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 202 Scientific method (e.g., observation, experimentation, analysis, theory development and reporting) | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 103 Issues of diversity, culture, ethnicity, race, gender in science | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 104 History of scientific innovations | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 105 Ethical issues in science | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| <none> | Science and Technology | Memorize Facts, Definitions, Formulas | Perform Procedures/Conduct Investigations | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ② ③ | 201 Design a solution or product, implement a design | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 202 Relationship between scientific inquiry and technological design | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 203 Technological benefits, trade-offs and consequences | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| <none> | Science, Health and Environment | Memorize Facts, Definitions, Formulas | Perform Procedures/Conduct Investigations | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ② ③ | 301 Personal health, behavior, disease, nutrition | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 302 Environmental health, pollution, waste disposal, resources, conservation | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 303 Resources, conservation | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 303 Natural and Human-caused hazards | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |

Step 1 annotations: Arrows point from the circled “<none>” in the “Time on Topic” column of the “Science and Technology” section to the “<none>” in the “Time on Topic” column of the “Nature of Science” section, and to the “0” in the “Time on Topic” column of the “Science, Health and Environment” section.

Step 3; Indicate relative emphases 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

| Time on Topic | Middle School Science | Expectations for Students in Science | | | | | |
|---------------|-----------------------|--|---------------------------------------|--|---|---------------------|---------------------------------|
| <none> | 1 | Nature of Science | Memorize Facts, Definitions, Formulas | Perform Procedures/ Conduct Investigations | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ② ③ | 101 | Scientific habits of mind (e.g. reasoning, evidence-based conclusions, skepticism) | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 102 | Scientific method (e.g., observation, experimentation, analysis, theory development and reporting) | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 103 | Issues of diversity, culture, ethnicity, race, gender in science | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 104 | History of scientific innovations | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 105 | Ethical issues in science | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| <none> | 2 | Science and Technology | Memorize Facts, Definitions, Formulas | Perform Procedures/ Conduct Investigations | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ② ③ | 201 | Design a solution or product, implement a design | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 202 | Relationship between scientific inquiry and technological design | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 203 | Technological benefits, trade-offs and consequences | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| <none> | 3 | Science, Health and Environment | Memorize Facts, Definitions, Formulas | Perform Procedures/ Conduct Investigations | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ② ③ | 301 | Personal health, behavior, disease, nutrition | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 302 | Environmental health, pollution, waste disposal, resources, conservation | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 303 | Resources, conservation | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |
| ① ② ③ | 303 | Natural and Human-caused hazards | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ | ① ② ③ |

Instructional Content For High School Science

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. The following pages request information regarding topic coverage and your expectations for students in the target Science class for the **2002-2003 school year (last school year)**.

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 which 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 "Instructional Technology" 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 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 1 | | Step 2 | | Step 3 | | | | |
|---------------|-----|--|--|---------------------------------------|--|---|---------------------|---------------------------------|
| Time on Topic | | K-8 Science Topics | | Expectations for Students in Science | | | | |
| | | | | Memorize Facts, Definitions, Formulas | Perform Procedures/ Conduct Investigations | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts Make Connections |
| <none> | 1 | Nature of Science | | | | | | |
| 0 1 2 3 | 101 | Scientific habits of mind (e.g. reasoning, evidence-based conclusions, skepticism) | | 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 | Scientific method (e.g., observation, experimentation, analysis, theory development and reporting) | | 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 | Issues of diversity, culture, ethnicity, race, 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 | 104 | 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 | 105 | Ethical issues in science | | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| <none> | 3 | Science, Health and Environment | | | | | | |
| 0 1 2 3 | 301 | Personal health, behavior, disease, nutrition | | 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 formula

Conduct Investigations/ Perform Procedures

- Make observations
- Collect and record data
- Use appropriate tools
- Make measurements, do computations
- Execute procedures
- Generate questions, make predictions
- Plan and design experiments
- 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, recognize patterns
- 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

High School Science

Expectations for Students in Science

| <none> | 1 | 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 | 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 | History 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 | 104 | Ethical Issues/Critiques 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 | 105 | Science, Technology & Society | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

| <none> | 2 | 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 | 201 | 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 | 202 | Mass & 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 | 203 | 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 | 204 | 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 | 205 | 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 | 206 | 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 | 207 | Accuracy & Precision | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 208 | 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 | 209 | Derived Units | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 210 | 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 | 211 | Density | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

| <none> | 3 | 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 | 301 | 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 | 302 | 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 | 303 | 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 | 304 | 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 | 305 | 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 | 306 | Genes | 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 | Cell Specialization | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

Time on Topic

High School Science

Expectations for Students in Science

| <none> | 4 | Biochemistry | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------------------|----------|---|--|---|--|----------------------------|--|
| 0 1 2 3 | 401 | 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 | 402 | Atomic Structure & 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 | 403 | 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 | 404 | 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 | 405 | Organic Compounds: 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> | 5 | Maintenance in Plants | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------------------|----------|------------------------------|--|---|--|----------------------------|--|
| 0 1 2 3 | 501 | Nutrition/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 | 502 | 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 | 503 | 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 | 504 | 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 | 505 | Health & disease | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

| <none> | 6 | 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 | 601 | 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 | 602 | 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 | 603 | 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 | 604 | 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 | 605 | 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 | 606 | Health & 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 | 607 | Skeletal & muscular 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 | 608 | Nervous & endocrine system | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

| <none> | 7 | Maintenance in Humans | 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/Digestive 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 | 702 | Circulatory System (Blood) | 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 | Excretory 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 | 704 | Respiration & Respiratory 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 | 705 | 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 | 706 | Health & 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 | 707 | Skeletal & muscular 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 | 708 | Nervous & endocrine system | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

Time on Topic

High School Science

Expectations for Students in Science

| <none> | 8 | Genetics | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------|------|--|--|---|--|----------------------------|--|
| 0 1 2 3 | 801 | Mendelian Genetics | 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 | Modern Genetics | 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 | Inherited diseases | 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 | Biotechnology | 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 | Human Genetics | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| <none> | 9 | Evolution | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| 0 1 2 3 | 901 | Evidence for Evolution | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 902 | Lamarckian 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 | 903 | Modern Evolutionary 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 | 904 | Life Origin 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 | 905 | Human Evolution | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 906 | Classification | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 907 | Causes | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| <none> | 10 | Reproduction & Development | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| 0 1 2 3 | 1001 | Mitotic/Meiotic Cell Division | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1002 | Asexual Reproduction | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1003 | Sexual Reproduction & Development in Plants | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1004 | Sexual Reproduction & Development in Animals | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1005 | Sexual Reproduction & Development in Humans | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| <none> | 11 | Ecology | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| 0 1 2 3 | 1101 | Nutritional 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 | 1102 | Competition & Cooperation | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1103 | Energy Flow 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 | 1104 | Ecological Succession | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1105 | Ecosystems | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1106 | Population Dynamics | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1107 | Environmental Chemistry | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1108 | Adaptation & Variation | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1109 | Populations | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

Time on Topic

High School Science

Expectations for Students in Science

| <none> | 12 | Energy | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------|------|------------------------------|---------------------------------------|--|---|---------------------|---------------------------------|
| 0 1 2 3 | 1201 | Potential Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1202 | Kinetic Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1203 | Conservation of Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1204 | Heat Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1205 | Light Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1206 | Sound Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1207 | Thermal Expansion & Transfer | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1208 | Work & Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1209 | Nuclear Energy | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

| <none> | 13 | Motion & Forces | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------|------|------------------------------------|---------------------------------------|--|---|---------------------|---------------------------------|
| 0 1 2 3 | 1301 | Vector & Scalar Quantities | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1302 | Displacement as a vector quantity | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1303 | Velocity as a vector quantity | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1304 | Relative position & velocity | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1305 | Acceleration | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1306 | Newton's First 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 | 1307 | Newton's Second 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 | 1308 | Newton's Third 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 | 1309 | Momentum, Impulse 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 | 1310 | 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 | 1311 | Friction | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 1312 | Universal Gravitation | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

| <none> | 14 | Electricity | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------|------|--|---------------------------------------|--|---|---------------------|---------------------------------|
| 0 1 2 3 | 1401 | 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 | 1402 | 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 | 1403 | 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 | 1404 | 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 | 1405 | Current, Voltage, & 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 | 1406 | Series & 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 | 1407 | 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 | 1408 | Effects of interacting fields | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

Time on Topic

High School Science

Expectations for Students in Science

| <none> | 15 | Waves | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------|------|---|--|---|--|----------------------------|--|
| Ⓐ Ⓑ Ⓒ Ⓓ | 1501 | Characteristics and behavior | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1502 | Light | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1503 | Electromagnetic | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1504 | Sound | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| <none> | 16 | Kinetics and Equilibrium | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1601 | Molecular motion | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1602 | Pressure | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1603 | Kinetics and temperature | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1604 | Equilibrium | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1605 | Reaction Rates | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| <none> | 17 | Properties of Matter | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1701 | Characteristics & composition | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1702 | States of matter (S-L-G) | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1703 | Physical & Chemical Changes | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1704 | Physical & Chemical Properties | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1705 | Isotopes, Atomic Number, & Atomic Mass | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1706 | Atomic Theory | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1707 | Quantum Theory & Electron Clouds | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| <none> | 18 | Earth Systems | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1801 | Earth's shape, dimension and composition | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1802 | Earth's origins and history | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1803 | Maps, locations and scales | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1804 | Measuring using relative and absolute time | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1805 | Mineral & Rock Formations & Types | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1806 | Erosion & Weathering | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1807 | Plate Tectonics | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1808 | Formation of: Volcanoes, Earthquakes, & Mountains | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1809 | Evidence of change | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1810 | Dynamics & Energy Transfer | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |
| Ⓐ Ⓑ Ⓒ Ⓓ | 1811 | Oceanography | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ | Ⓐ Ⓑ Ⓒ Ⓓ |

Time on Topic

High School Science

Expectations for Students in Science

| <none> | 19 | Astronomy | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
|---------|------|--|---------------------------------------|--|---|---------------------|---------------------------------|
| 0 1 2 3 | 1901 | Stars | 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 | Galaxies | 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 | The Solar 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 | 1904 | The Moon | 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 | Location, Navigation, & Time | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| <none> | 20 | Meteorology | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| 0 1 2 3 | 2001 | The Earth's Atmosphere | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 2002 | Air Pressure & Winds | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 2003 | Evaporation / Condensation / Precipitation | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 2004 | Weather | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 2005 | Climate | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| <none> | 21 | Elements & The Periodic System | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| 0 1 2 3 | 2101 | Early Classification System(s) | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 2102 | Modern Periodic Table | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 2103 | Interaction of elements | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| 0 1 2 3 | 2104 | Element families & periods | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| <none> | 22 | Chemical Formulas & Reactions | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| 0 1 2 3 | 2201 | Names, Symbols, & 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 | 2202 | Molecular & 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 | 2203 | 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 | 2204 | 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 | 2205 | 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 | 2206 | 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 | 2207 | 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 | 2208 | 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 | 2209 | The Mole | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |

| <i>Time on Topic</i> | <i>High School Science</i> | <i>Expectations for Students in Science</i> | | | | | |
|----------------------|----------------------------|--|--|---|--|----------------------------|--|
| <none> | 23 | Acids, Bases, & Salts | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ① ② ③ | 2301 | Arrhenius, Bronsted-Lowry, & Lewis Theories | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2302 | Naming Acids | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2303 | Acid-Base behavior/strengths | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2304 | Salts | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2305 | pH | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2306 | Hydrolysis | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2307 | Buffers | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2308 | Indicators | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2309 | Titration | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| <none> | 24 | Organic Chemistry | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ① ② ③ | 2401 | Hydrocarbons, Alkenes, Alkanes, & Alkynes | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2402 | Aromatic Hydrocarbons | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2403 | Isomers & Polymers | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2404 | Aldehydes, Ether, Ketones, Esters, Alcohols, & Organic Acids | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2405 | Organic Reactions | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2406 | Carbohydrates, Proteins, Lipids | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| <none> | 25 | Nuclear Chemistry | Memorize Facts/ Definitions/ Formulas | Conduct Investigations/ Perform Procedures | Communicate Understanding of Science Concepts | Analyze Information | Apply Concepts/Make Connections |
| ① ① ② ③ | 2501 | Nuclear Structure | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2502 | Nuclear Equations | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2503 | Fission | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2504 | Radioactivity | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2505 | Half-life | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |
| ① ① ② ③ | 2506 | Fusion | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ | ① ① ② ③ |

Please continue to the next section of the survey.

Classroom Practices & Teacher Characteristics

For

High School

Science

Selecting the Target Class-- For all questions about instructional content and 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.

The following pages request information regarding students in the target Science class for the 2002-2003 school year (last school year).

HOMEWORK (work assigned to be done outside of class)

Answer the following questions with regard to your target class:

- 14 How often do you usually assign science homework to be done outside of class?
- ① Never (Skip to # 18) ③ 3-4 times per week
 ② Once or twice per week ④ Every day
- 15 How many minutes does the typical student spend on a normal homework assignment done outside of class?
- ① I do not assign homework ③ 31-60 minutes
 ② 15-30 minutes ④ 61-90 minutes
 ⑤ More than 90 minutes
- 16 Does homework done outside of class count towards student grades?
- ① Never ② Usually does
 ③ Usually does not ④ Always does
- 17 How often do you assign homework to be completed in a small group outside of class?
- ① Never ③ 3-4 times per week
 ② Once or twice per week ④ Every day

AMOUNT OF HOMEWORK TIME (for the school year)

0 - None
1 - Little (10% or less of homework time for the school year)
2 - Some (11-25 % of homework time for the school year)
3 - Moderate (26-50% of homework time for the school year)
4 - Considerable (more than 50% of homework time for the school year)

For the target class, how much of the time that students spend on science homework done *outside of class* do they:

- | | None | Little | Some | Moderate | Considerable |
|---|-------------|---------------|-------------|-----------------|---------------------|
| 18 Read about science in books, magazines, or articles. | ① | ② | ③ | ④ | ⑤ |
| 19 Answer questions from a science textbook or worksheet. | ① | ② | ③ | ④ | ⑤ |
| 20 Solve science problems that require computation. | ① | ② | ③ | ④ | ⑤ |
| 21 Revise and improve students' own work (for example, 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 in a report/paper. | ① | ② | ③ | ④ | ⑤ |

INSTRUCTIONAL ACTIVITIES IN SCIENCE

Listed below are questions about the types of activities that students in the target class engage in during science instruction. For each activity, you are asked to estimate the relative amount of time a typical student will spend engaged in that activity over the course of a school year. The activities are not necessarily mutually exclusive; across activities, your answers will undoubtedly greatly 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 spends over the course of a school year engaged in that activity.

| AMOUNT OF INSTRUCTIONAL TIME (for the school year) | |
|---|--|
| 0 - None | |
| 1 - Little (10% or less of instructional time for the school year) | |
| 2 - Some (11-25 % of instructional time for the school year) | |
| 3 - Moderate (26-50% of instructional time for the school year) | |
| 4 - Considerable (more than 50% of instructional time for the school year) | |

| How much of the total science instructional time do students in the target class: | None | Little | Some | Moderate | Considerable |
|--|-------------|---------------|-------------|-----------------|---------------------|
| 25 Listen to the teacher explain something to the class as a whole about science. | ① | ② | ③ | ④ | ⑤ |
| 26 Read about science in books, magazines, articles (not 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/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 <i>in pairs or small groups</i> (other than laboratory activities). | ① | ② | ③ | ④ | ⑤ |
| 33 Do a science activity with the class outside the classroom or science laboratory (for example, 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 |

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

0 - None

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

2 - Some (11-25 % 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)

5 - Almost all (more than 75% of instructional time in laboratory activities, investigations, or experiments)

When students in the target class are engaged in *laboratory activities, investigations, or experiments* as part of science instruction, how much time do they:

| | None | Little | Some | Moderate | Considerable |
|---|-------------|---------------|-------------|-----------------|---------------------|
| 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 (10% or less of instructional time in pairs or small groups)

2 - Some (11-25 % 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* (other than in the science laboratory), how much time do they:

| | None | Little | Some | Moderate | Considerable |
|--|-------------|---------------|-------------|-----------------|---------------------|
| 46 Talk about ways to solve science problems, such as investigations. | ① | ② | ③ | ④ | ⑤ |
| 47 Complete written assignments from the textbook or workbook. | ① | ② | ③ | ④ | ⑤ |
| 48 Write up results or prepare a presentation from a laboratory activity, investigation, experiment or a research project. | ① | ② | ③ | ④ | ⑤ |
| 49 Work on an assignment, report or project over an extended period of time. | ① | ② | ③ | ④ | ⑤ |
| 50 Work on a writing project or entries for portfolios seeking peer comments to improve work. | ① | ② | ③ | ④ | ⑤ |
| 51 Review assignments or prepare for a quiz or test. | ① | ② | ③ | ④ | ⑤ |

AMOUNT OF INSTRUCTIONAL TIME (collecting science data or information)

0 - None

1 - Little (10% or less of instructional time collecting science data or information)

2 - Some (11-25 % 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 science data or information* from books, magazines, computers, or other sources (other than laboratory activities), how much time do they:

| | None | Little | Some | Moderate | Considerable |
|---|-------------|---------------|-------------|-----------------|---------------------|
| 52 Have class discussions about the data. | ① | ② | ③ | ④ | ⑤ |
| 53 Organize and display the information in tables or graphs. | ① | ② | ③ | ④ | ⑤ |
| 54 Make a prediction based on the data. | ① | ② | ③ | ④ | ⑤ |
| 55 Analyze and interpret the information or data, orally or in writing. | ① | ② | ③ | ④ | ⑤ |
| 56 Make a presentation to the class on the data, analysis, or interpretation. | ① | ② | ③ | ④ | ⑤ |

AMOUNT OF INSTRUCTIONAL TIME (using calculators, computers or other ed. technology)

0 - None

1 - Little (10% or less of instructional time using calculators, computers, or other ed. technology)

2 - Some (11-25 % of instructional time using calculators, computers, or other ed. technology)

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

4 - Considerable (more than 50% of instructional time using calculators, computers, or other ed. 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 time do they:

| | None | Little | Some | Moderate | Considerable |
|---|-------------|---------------|-------------|-----------------|---------------------|
| 57 Learn facts. | ① | ② | ③ | ④ | ⑤ |
| 58 Practice procedures. | ① | ② | ③ | ④ | ⑤ |
| 59 Use sensors and probes (for example, CBL's). | ① | ② | ③ | ④ | ⑤ |
| 60 Retrieve or exchange data or information (for example, using the Internet or partnering with another class). | ① | ② | ③ | ④ | ⑤ |
| 61 Display and analyze data. | ① | ② | ③ | ④ | ⑤ |
| 62 Solve problems using simulations. | ① | ② | ③ | ④ | ⑤ |

ASSESSMENTS

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

| | Never | 1 - 4 times per year | 1 - 3 times per month | 1 - 3 times per week | 4 - 5 times per week |
|---|-------|-------------------------|--------------------------|-------------------------|-------------------------|
| 63 Objective items (for example, multiple choice, true/false). | ① | ② | ③ | ④ | ⑤ |
| 64 Short answer (for example, 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 (for example, hands-on activities). | ① | ② | ③ | ④ | ⑤ |
| 67 Individual or group demonstration, 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, 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 or guidelines. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 73 Textbook / instructional materials. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 74 State tests or results. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 75 District tests or results. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 76 National science education standards. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 77 Your experience in pre-service preparation. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 78 Students' special needs. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 79 Parents/community. | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 80 Preparation of students for the next grade or level. | ① | ② | ③ | ④ | ⑤ | ⑥ |

CLASSROOM INSTRUCTIONAL PREPARATION

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 (district, state, or 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 who are using 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 disabilities. | ① | ② | ③ | ④ |
| 88 Teach classes with 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

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 principal. | ① | ② | ③ | ④ | ⑤ |
| 100 The principal takes personal interest in the professional development of the teachers. | ① | ② | ③ | ④ | ⑤ |

PROFESSIONAL DEVELOPMENT ACTIVITIES IN SCIENCE EDUCATION

In answering the following items, consider all the professional development activities related to Science content or Science education that you have participated in between **June 1st of last year and May 31st of this 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? | |
|------------|--------------|-----------------|------------|
| ① Never | ③ 3-4 times | ① N/A | ③ 16-35 |
| ② Once | ④ 5-10 times | ② 1-6 hrs. | ④ 36-60 |
| ⑤ Twice | ⑤ >10 times | ⑤ 7-15 hrs. | ⑤ 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? | ① ② ③ ④ ⑤ | ① ② ③ ④ ⑤ |
| 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? | ① ② ③ ④ ⑤ | ① ② ③ ④ ⑤ |
| 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? | ① ② ③ ④ ⑤ | ① ② ③ ④ ⑤ |

Between June 1st of last year and May 31st of this 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 year | Once or
twice a term | Once or
twice a
month | Once or
twice a
week | Almost
daily |
|-----|-------|-------------------------|-------------------------|-----------------------------|----------------------------|-----------------|
| 104 | ① | ① | ② | ③ | ④ | ⑤ |
| 105 | ① | ① | ② | ③ | ④ | ⑤ |
| 106 | ① | ① | ② | ③ | ④ | ⑤ |
| 107 | ① | ① | ② | ③ | ④ | ⑤ |
| 108 | ① | ① | ② | ③ | ④ | ⑤ |
| 109 | ① | ① | ② | ③ | ④ | ⑤ |
| 110 | ① | ① | ② | ③ | ④ | ⑤ |

Thinking again about all of your professional development activities in science or science education since June 1, 2002, how often have you:

| | | Never | Rarely | Some times | Often |
|-----|--|--------------|---------------|-------------------|--------------|
| 111 | Observed demonstrations of teaching techniques. | ① | ② | ③ | ④ |
| 112 | Led group discussions. | ① | ② | ③ | ④ |
| 113 | Developed curricula or lesson plans, which 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. | ① | ② | ③ | ④ |
| 116 | Practiced what you learned and received feedback. | ① | ② | ③ | ④ |
| 117 | Received coaching or mentoring in the classroom. | ① | ② | ③ | ④ |
| 118 | Gave a lecture or presentation to colleagues. | ① | ② | ③ | ④ |

Thinking about all of your professional development activities in science or science education since June 1, 2002, indicate how often they have been:

| | N/A | Never | Rarely | Some times | Often |
|-----|---|--------------|---------------|-------------------|--------------|
| 119 | Designed to support the school-wide improvement plan adopted by your school. | ⑨ | ① | ② | ③ |
| 120 | Consistent with your science department or grade level plan to improve teaching. | ⑨ | ① | ② | ③ |
| 121 | Consistent with your own goals for your professional development. | ⑨ | ① | ② | ③ |
| 122 | Based explicitly on what you had learned in earlier professional development activities. | ⑨ | ① | ② | ③ |
| 123 | Followed up with related activities that built upon what you learned as part of the activity. | ⑨ | ① | ② | ③ |

Since June 1, 2002, have you participated in professional development activities in science or science education in the following ways?

| | No | Yes |
|---|-----------|------------|
| 124 I participated in professional development activities with most or all of the teachers from my school. | ⓪ | ① |
| 125 I participated in professional development activities with most or all of the teachers from my department or grade level. | ⓪ | ① |
| 126 I participated in professional development activities <i>not</i> attended by other staff members from my school. | ⓪ | ① |
| 127 I discussed what I learned with other teachers in my school or department who did <i>not</i> attend the activity. | ⓪ | ① |

How much *emphasis* did your professional development activities in science or science education place on the following topics?

| | None | Slight | Moderate | Great |
|--|-------------|---------------|-----------------|--------------|
| 128 State science content standards (for example, what they are and how they are used). | ⓪ | ① | ② | ③ |
| 129 Alignment of science instruction to curriculum. | ⓪ | ① | ② | ③ |
| 130 Instructional approaches (for example, use of manipulatives). | ⓪ | ① | ② | ③ |
| 131 In-depth study of science or specific concepts within science (for example, earth science). | ⓪ | ① | ② | ③ |
| 132 Study of how children learn particular topics in science. | ⓪ | ① | ② | ③ |
| 133 Individual differences in student learning. | ⓪ | ① | ② | ③ |
| 134 Meeting the learning needs of special populations of students (for example, second language learners; students with disabilities). | ⓪ | ① | ② | ③ |
| 135 Classroom science assessment (for example, diagnostic approaches, textbook-developed tests, teacher-developed tests). | ⓪ | ① | ② | ③ |
| 136 State or district science assessment (for example, preparing for assessments, understanding assessments, or interpreting assessments). | ⓪ | ① | ② | ③ |
| 137 Interpretation of assessment data for use in science instruction. | ⓪ | ① | ② | ③ |
| 138 Technology to support student learning in science. | ⓪ | ① | ② | ③ |

TEACHER CHARACTERISTICS

139 Please indicate your gender.

Female Male
① ②

140 Please indicate your ethnicity/race.

Indicate all that apply

- ① American Indian or Alaska Native
- ② Asian
- ③ Black or African American
- ④ Hispanic or Latino
- ⑤ Native Hawaiian or Other Pacific Islander
- ⑥ 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 | 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 bachelors degree?

- ① Elementary Education
- ② Middle School Education
- ③ Science Education
- ④ Science
- ⑤ Science Education and science
- ⑥ Other Disciplines (includes other Education fields, Science, History, English, Foreign Languages, etc.)

145 **If applicable**, what was your **major field** of study for the **highest degree you hold** beyond a bachelors degree?

- ① Elementary Education
- ② Middle School Education
- ③ Science Education
- ④ Science
- ⑤ Science Education and science
- ⑥ Other Disciplines (includes other Education fields, Mathematics, History, English, Foreign Languages, etc.)

146 What type(s) of state certification do you currently have?

① Emergency or Temporary Certification
② Elementary Grades Certification
③ Middle Grades Certification
④ Secondary certification in a field other than science
⑤ Secondary science Certification

Indicate all that apply

FORMAL COURSE PREPARATION

Please indicate the number of *quarter or semester courses* that you have taken at the undergraduate 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 survey. Thank you for your participation.

PLEASE TURN TO THE BACK COVER AND FILL IN YOUR CONTACT INFORMATION.