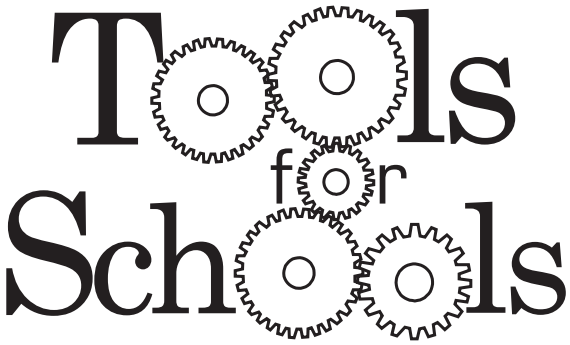

Science –
The New Assessments

Resource Materials

Frequently Asked Questions

Program Requirements for the Sciences:

Part 100.3(1)(b)(i), 100.3(2)(c), 100.4(iii), 100.5(2)(iii)

General Program Requirements

1. **What is a Core Curriculum in the sciences?**
   A Core Curriculum is a guideline document prepared by the State Education Department to be used by school districts, community school districts or BOCES to develop curriculum in a science content area. All Core Curricula are based on the State learning standards. All new assessments are based on science Core documents.
2. **Are all of the Core Curriculum in the sciences available at this time?**
   The Department has core curriculum in four commencement level or Regents area sciences: The Living Environment/Biology, The Physical Setting/Earth Science, The Physical Setting/Chemistry, and the Physical Setting/Physics. The Department has developed a Core Curriculum for the elementary level and the intermediate level science. The K-12 Science Resource Guide with Core Curriculum will include all six science Cores.
3. **Will all statewide assessments be based on Core Curriculum?**
   Yes. All statewide assessments will be based on content and skills that are covered in the Core Curriculum.
4. **Does the Core Curriculum contain the only content that must be covered?**
   Curriculum developed from the Core may also cover in-depth topics, enrichment materials, and topics of local interest. The addition of such topics and materials reinforces the Core Curriculum. This added material will not be tested on the elementary science assessment, the intermediate assessment, or any science Regents examination.

Program Requirements for Elementary Level (Grades K through 4)

1. **What are the program requirements for the elementary level?**
   All students shall receive daily instruction in science that is designed to facilitate their attainment of the relevant State mathematics, science and technology learning standards and the Elementary Core Curriculum. The Elementary Level Science Assessment (ELS) will be administered in grade four.
2. **What material will the elementary science assessment test?**
   The Elementary Level Science Assessment is designed to test the skills and concepts of the State learning standards taught in grades kindergarten through four.

Program Requirements for the Intermediate Level (Grades 5 through 8)

1. **What are the program requirements for Grades 5 and 6?**
   All students shall receive daily instruction in science that is designed to facilitate their attainment of the relevant State mathematics, science and technology learning standards and the Intermediate Core Curriculum.

continued

2. What are the program requirements for Grades 7 and 8?
All students shall be provided instruction in two units of science so that, by the end of grade eight, they have knowledge of the intermediate level science skills and concepts contained in the State mathematics, science, and technology learning standards and the Intermediate Core Curriculum. The Intermediate Science Assessment (ILS) will be administered in grade eight.

3. When may a student be accelerated in the sciences?
A student may be accelerated in the sciences at grade eight. The student must meet local criterion set by their school district and/or the State Education Department [100.4 (c)]

Program Requirements for the Commencement Level (High School)

1. What is the graduation requirement for science?
Beginning with the freshman class of 2001 – 2002, students must complete three credits in science. Students must complete two courses based on the Cores, one from the Physical Setting and one from Living Environment. Students must pass one Regents examination. All science courses must be aligned with the Learning Standards for Mathematics, Science and Technology Education. [100.5 (3iii)]

2. What are the requirements in science for a student to earn an Advanced Regents diploma designation?
To earn a Regents diploma with the Advanced designation, students must complete three credits in Regents science based on the Cores, one from the Physical Setting and one from Living Environment. Students must pass two Regents examinations. [100.5 (7) (v), (b)]

3. What constitutes a Regents science course?
A Regents science course must have a curriculum that follows Standards 1, 2, 4, 6, and 7, of the Learning Standards for Mathematics, Science, and Technology. Courses that end in a Regents examination in science must also have a curriculum that contains one of the four Core Curriculum documents in a Regents science.

4. May extended courses be taught in the Regents sciences?
Three and four semester extended courses may be taught in the Regents sciences where the course ends in a Regents examination. Credit may be offered at 0.5 credits per semester, i.e., 1.5 credits for a three-semester course, and 2.0 credits for a four-semester course.

5. May the third credit in science be taken first?
Beginning with the freshmen class of 2001, students may be permitted to attend elective courses which prepare students for Regents coursework: e.g., math/science/technology skills and content; basic skills in science, etc.

6. May a student challenge the Regents examination in a science?
A student may challenge the Regents examination only if he/she has completed the laboratory requirement of 1200 minutes of hands-on lab with satisfactory lab reports. The student will successfully complete a special project to demonstrate proficiency. The student must pass the Regents examination in science with a score of no less than 85. [100.5, (v),(b)]

continued

7. **Are there any instances when a student may be exempted from the Regents diploma requirement in science?**
   Beginning in the 2004-2005 school year, the principal may exempt a student who enters a registered New York high school for the first time in grade 12, from the requirement for the Regents Examination in Science.

8. **Must a Regents science course contain a lab requirement?**
   Yes. All Regents science courses must contain a lab component.

9. **What is the laboratory requirement?**
   For entry into a Regents examination a student must complete a minimum of 1200 minutes of hands-on lab with satisfactory lab reports. The lab reports must be kept on file for at least six months after the Regents examination. [100.5 (7) (iv), (d)]

10. **Must the lab requirement be met before entry into a Regents examination in science?**
    Yes.

11. **If a student fails a Regents science course, must the student again complete the lab requirement the following year?**
    The State Education Department highly recommends that the lab requirement be completed again.

12. **If a student takes a Regents course for the first time in summer school, must the student complete the lab requirement?**
    Yes.

13. **May a student be exempted from the lab requirement?**
    Students in a Regents science course must complete the laboratory requirement. Students who are hospitalized, homebound, or home-schooled are expected to complete the laboratory requirement; alternative or comparative laboratories may be given. An exemption for a student may be requested in writing from the State Education Department only under extreme circumstances.

14. **Is the laboratory requirement part of a five-period per week class?**
    The minimum laboratory requirement of 1200 minutes for entry into a Regents science examination is in addition to the seat time requirement of 180 minutes per week. For most schools this may require the addition of a period. The science cores will state recommendations of 280 minutes per week of class/lab time.

15. **Can a student be exempted from the minimum 1200 minute laboratory requirement by a school administrator or teacher?**
    No. Exemptions may be granted only by the State Education Department under extreme conditions, e.g., terminal illness, catastrophic injury.

16. **Must students with disabling conditions meet the laboratory requirement for entry into the Regents examination in a science?**
    Students must meet the standard as set by the State - a minimum of 1200 minutes of hands-on lab with satisfactory laboratory reports.

continued

Special Needs Students

1. What accommodations and modifications may be used in the laboratory setting?

All accommodations and modifications found in the student's Individualized Educational Plan (IEP) may be transferred over to the laboratory setting. For example, a student with a visual impairment may have a lab partner or an aide report observations to the student. The student, however, must manipulate the data or make inferences from the observed data.

2. What is the science teacher's responsibility in implementing the IEP?
According to the Commissioner's Regulations, Part 200 – Students with Disabilities, [200.4 (e), (3)], the school district must ensure that each regular education teacher who is responsible for the implementation of a student's IEP shall have access to a copy of the IEP. Teachers shall be informed of responsibilities related to implementing the student's IEP, and the specific accommodations, modifications, and supports that must be provided in accordance with the IEP.

3. What modifications in testing procedures are permitted or required on New York State science assessments?
Students may be entitled to testing modifications for:

- temporary disability (e.g., broken arms, hospitalization)
- § 504 plans
- IEP modifications

The implementation of these modifications can be found in the most recent copy of the School Administrator's Manual for Regents Examinations and Proficiency Examinations, as well as in the Commissioner's Regulations.

4. Are Academic Intervention Services (AIS) required for low-performing students?
Commissioner's Regulations [100.2 (ee), (1), (2), and (3)] require the provision of AIS in grades 4 – 12 based on student's performance on elementary, intermediate, or graduation examinations, no later than the beginning of the semester following a determination that a student needs such services. This service should be provided by qualified and appropriately certified staff. (See Guidelines for Implementing AIS, Memo from New York State Education Department, James A. Kadamas, June 2000).

Laboratory Requirements

Often the New York State Education Department receives questions from teachers, administrators, parents and students regarding the laboratory requirement. The following may be useful to teachers and administrators in addressing concerns about meeting the laboratory requirement.

- All students in a Regents science course must complete the laboratory requirement prior to entry into a Regents examination in science.

  – Exemptions to the laboratory requirement may be granted only by the New York State Education Department under extreme conditions, e.g., seniors with a catastrophic injury, or terminal illness.

  – The laboratory requirement for entry into a Regents science examination is a minimum of 1200 minutes of hands-on lab with satisfactory laboratory reports. This may be found in statement form in each New York State Regents Core Curriculum in science, as well as the Commissioner's regulations. Districts may set a higher time requirement, but it should be stated in school policy; students and parents should be informed of the school's requirements.

  – The requirement is stated in Part 100 regulation (passed 7/1999) as "1200 minutes." This represents a time requirement, not a quantity requirement (i. e., not a particular number of laboratory reports).

  – All laboratories completed by students should be hands-on. Students should be actively engaged in laboratory work. While computer programs, research conducted in libraries or on the Internet, and worksheets may be a part of the laboratory experience, they should not comprise the sole experience. Teacher demonstrations, followed by student reports are also not considered to be a hands-on experience.

  – All students must complete satisfactory laboratory reports. The laboratory report format is set at the local level.

  – By regulation, laboratory reports must be kept on file for a minimum of six months. For students who transfer into a district, copies of labs completed by the student, or a letter from the student's teacher or principal stating completion of labs to the date of transfer are acceptable and should also be kept on file for six months.

  – It is recommended that teachers of science keep a log of labs with date completed, minutes to complete, etc. Logs can be used to easily ascertain the time requirement for all students, including those who may transfer to other schools.

continued

– Any laboratory experience that uses toxic and/or hazardous materials or potentially hazardous materials, etc. must take place under the guidance of a certified science teacher whether in, or out of school.

– Safety instruction relevant to the laboratory experience must be given to all students prior to entering the laboratory.

Please keep in mind that students must complete the minimum 1200 minutes of hands-on laboratory experiences, with satisfactory laboratory reports prior to entry into a Regents examination in science. Therefore teachers may wish to publicize a date when all labs must be completed.

It should also be noted that Part 100.5 of the Regulations of the Commissioner of Education state that "The 1200 minutes of laboratory experience must be in addition to the required classroom instruction associated with earning a unit of credit." Because of the strong emphasis on student development of laboratory skills, each Regents Core Curriculum in science suggests a minimum of 280 minutes of class and laboratory per week.

For students with disabilities, or students who are homebound, hospitalized, or recovering from catastrophic illness or injury, laboratories may be used that are comparative to those of their peers. Also alternative laboratories may be used that correspond with the content of each particular Regents science syllabus. For example the following suggestions may be used in the situation of the homebound student regarding the content area of chemistry.

The student may:

- use micro labs, instead of macro labs
- summarize and/or further expand laboratory data from his/her peers
- interview research scientists, medical personnel, etc.
- use computerized laboratory experiences
- use common household substances to observe and study
- attend school during scheduled laboratory sessions

It is also important that the student has as many hands-on experiences as possible.

If you need additional assistance, call Diana K. Harding at 518 486-1970.

September 2000

Intermediate-Level SCIENCE EXAMINATION

Test Sampler Draft

Spring 2000

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Office of Curriculum, Instruction, and Assessment
Albany, New York 12234

WEB WONDERS: Keeping Teaching Fresh

To study science is to study how the world works and how people work in the world. But so often students lose interest in scientific exploration sometime between 3rd grade biology experiments of sprouting soybeans and 9th grade chemistry discussions of atoms and ions. Here are some Web sites to entice your students to take a renewed interest in the wonderful and wacky world of science.

FOR THE BUDDING SCIENTIST

The JASON Project
http://www.jasonproject.org/
If trekking through the tropical rain forests of Peru and studying organisms in ocean environments are your students' ideas of fun, then this site is for them. The JASON Projects are year-round expeditions that combine distance learning and scientific exploration. Students can read journals and look at pictures from past expeditions or sign up for e-mail updates from Hawaii, where researchers from JASON XII are exploring volcanoes.

Bill Nye the Science Guy
http://nyelabs.kcts.org/openNyeLabs.html
The Science Guy has his own Web site. Here students can conduct experiments from the popular television show, read facts from each episode, or e-mail The Science Guy a question. Check out "Demo of the Day"! Teachers, find Episode Guides in the "Teachers' Lounge."

Science Fair Central
http://school.discovery.com/sciencefaircentral
If your budding Marie Curie or Albert Einstein is having difficulty dreaming up a project for a science fair, stop by "Science Fair Central." The "Project Ideas" section has questions that can inspire even the most unmotivated student. A handbook tells students what a science project is and how to create an award-winning project. Also on this site are an organizer for teachers and advice for parents about how to help their children complete their projects. Search for "Edison" to find an intriguing "Sitting Bull/Thomas Edison Link" game.

Women in Science
http://library.thinkquest.org/20117/
Girls and young women who wish to pursue careers in science can feel isolated by their interests. Here they can find inspiration by reading biographies of past and present female scientists or by contacting a female scientist to inquire about her field. Click on "Online Interviews" to read how different female scientists answered the same eight questions, or go on an Electronic Field Trip to see photos of different female scientists at work. Students at Craigmont High School in Tennessee submitted this site for the 1998 ThinkQuest Internet Challenge. By the way, back up to the "library" at ThinkQuest to find other fascinating student work – for example, another 1998 site that begins with a question: "Are mites little monsters . . . ?"

continued

IT'S A BRAVE NEW WORLD

How Stuff Works
http://www.howstuffworks.com/index.htm
How does a tattoo work? How is sea level determined? How do compact disks work? Are you plagued by questions like these? Search for information about carbon monoxide - you might even save your own life! How Stuff Works is an online magazine that explains in plain English how things work - everything from light sabers to refrigerators to hurricanes. Browse though the list of articles, organized by subject, or search for the topic that interests you most.

The Why Files
http://whyfiles.news.wisc.edu/
The media are expert at creating controversy about the latest scientific discovery without conveying the scientific information behind the fad. At the Why Files, students can uncover the truth behind the headlines. Visit the Environmental subsite under "More Stories" to read why ecologists love wildfires, or visit the Health subsite to learn why millions mourned when Princess Diana died. Click on "Cool Science Images" to see pictures and explanations of scientific phenomena at work in our world.

The Lab
http://www.abc.net.au/science
Karl Kruszelnicki, Julius Summer Miller Fellow at the University of Sidney, is the host of this science site brought to you by the Australian Broadcasting Company. Explore the cosmos at "In Space" or read about how solar energy is powering the 2000 Summer Olympics in "Love That Planet." Educators can join the Teaching Science e-mail list to discuss issues in teaching science. [Warning: Due to its mature content, we strongly recommend that educators use this site with older students only.]

Seeing, Hearing, and Smelling the World
http://www.hhmi.org/senses/
Everything that we learn has to first be perceived by the senses and then interpreted by the brain. What is the biology behind the learning? From the Howard Hughes Medical Institute, this site explains how the brain sees, hears, and smells. Articles are written clearly for the general reader, but are not "dumbed down." Read about how the nervous system makes sense of its environment.

EXHIBITS ONLINE

The Smithsonian Institution
http://www.si.edu/
Composed of 16 museums, numerous galleries, research centers, and the National Zoo, the Smithsonian Institution in Washington, D.C., USA, offers a vast variety of information for young scientists. View "what's New" to learn how the National Air and Space Museum celebrated Space Day (May 4), or visit "Museums and Research Centers" to take a virtual tour of all the facilities that comprise the Smithsonian. Educators can click "Education & Outreach,"

continued

then click on "Resources for Educators" for online exhibits and professional development especially for them.

The Annenberg/CPB exhibits
http://www.learner.org/exhibits/
Discover the physics behind roller coasters and other amusement park adventures at the Annenberg/CPB exhibits. These and other interactive online exhibits are inspired by the Annenberg/CPB educational video series. In the Weather exhibit, click on "Forecasting" to learn how meteorologists calculate wind chill factors, or take the test in the "Personality" exhibit to learn how others see you (click on "Reputation"). Stroll through the Copan Valley and Choco Canyon to discover why the Mayan and Anasazi civilizations collapsed. Educators should be sure to visit the "Teacher's Lab" for activities that teachers can use in their classrooms.

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Compiled by Michelle McKinley Assistant Editor, ASCD's Program Development Work Group. Association for Supervision and Curriculum Development.

400+ Ways to Show What You Know about Biology

The New York State Education Department has a variety of learning experiences posted on its Web site through the New York State Academy for Teaching and Learning. Learning experiences for Mathematics, Science and Technology are available for elementary, intermediate, and commencement levels. Following is a sample of activities to stimulate student thinking in Biology at the commencement level. The listing provides an insight into the first 100 activities of the more than 400 activities students are encouraged to explore. The full learning experience can be obtained by accessing the Web site through *http://www.nysatl.nysed.gov/Science/index.html*. Using 400+ Ways to Show What You Know encourages students to use their learning styles and interests to apply biology to new situations. The learning experience was created by Susan Holt for Grades 9 and 10 Regents Biology in the Williamsville Central Schools.

1. Act as teacher for one day and teach a class
2. Adopt a species from the zoo and become a specialist on it
3. After each class, make a 'What interested me" and "Why should I care?" list
4. Analyze a diet plan
5. Arrange for a field trip for the biology club
6. Arrange for a guest speaker for the biology club
7. Arrange for a lab for biology club
8. Attend all of the Western New York Science Forum programs at University at Buffalo and write a journal response about each of them
9. Be a reviewer of videotapes on the biology of space travel from NASA
10. Become a lab specialist for a marking period and serve as a lab assistant who answers questions for other students during lab classes or makeup labs
11. Before any lab be sure to write down what you think will happen (from what you already know)
12. Build a compost bin and write instructions for its use
13. Care for a section of school lawn
14. Chart change
15. Choreograph a dance to simulate a biological process
16. Classify a collection of plant or animal specimens
17. Collect examples of biologically incorrect advertising and explain why they are incorrect
18. Collect examples of enzymes from a grocery store or pharmacy and design labs to illustrate their action
19. Collect information of holistic medicine
20. Collect information on a national park and plan a nature study trip to this park
21. Collect information on aging

continued

22. Collect information on cancer prevention, detection and treatment
23. Collect information on closed ecosystems and then set up several examples for the classroom
24. Collect information on how zoning is being used to protect natural habitats
25. Collect information on hydroponics and set up miniature hydroponics demonstration gardens in the classroom
26. Collect information on one endangered species that lives in the Western New York area and develop a plan for "saving the ____"
27. Collect information on the biology of beauty products
28. Collect information on the biology of body building
29. Collect information on the diagnostic products available in a pharmacy and how these products are used
30. Collect information on vegetarianism
31. Collect information on the anatomy, physiology, behavior, evolution, and ecology of a pet
32. Collect magazine and newspaper articles that involve questions of bioethics
33. Collect magazine or newspaper articles and write quizzes based on these articles
34. Combine information from various sources
35. Compare different ways of preserving food
36. Compare two different types of organisms
37. Complete a college application
38. Conduct a field investigation
39. Conduct a research investigation of the ecology of an aquarium
40. Conduct a research investigation of the ecology of one type of plant or animal found in the schoolyard
41. Conduct a survey to see what seniors remember most about biology
42. Conduct and analyze an opinion poll on a bioethical issue
43. Create a board game
44. Create a brochure
45. Create a card game
46. Create a catalog
47. Create a classroom chart
48. Create a collage
49. Create comic strips
50. Create a computer timeline
51. Create a conversation with a famous person
52. Create a costume
53. Create a crossword puzzle
54. Create a dictionary game
55. Create a "document based question" for biology that is like the first question on an AP United States History examination

continued

56. Create a genetics family of "creatures" to represent many inheritance patterns
57. Create a hypothetical cemetery
58. Create a "Jeopardy" game
59. Create a learning safari
60. Create a magazine
61. Create a microscope scavenger hunt
62. Create a mobile
63. Create a mural
64. Create a museum
65. Create a newspaper
66. Create a Pictionary game
67. Create a public relations campaign
68. Create a quiz
69. Create a robotics organism
70. Create a room
71. Create a simulation to model a biological process
72. Create a test
73. Create a time capsule to illustrate the progress of biology at some historical time period
74. Create a transparency overlay series
75. Create an academic Olympiad game
76. Create an advertisement
77. Create an archeological or fossil excavation
78. Create and explain a series of personal analogies for biology concepts
79. Create bingo games that could be used to review for the biology final examination
80. Create biology art by scanning and then changing biology illustrations
81. Create globes
82. Critique the explanation of a topic in a textbook
83. Debate the use of animals for research
84. Decorate the room to illustrate one biological theme—energy, organization, genetics, development, homeostasis, interdependence, or evolution
85. Define death
86. Define healthy
87. Define life
88. Demonstrate a lab procedure
89. Demonstrate and explain optical illusions
90. Demonstrate the biology of a sport
91. Demonstrate the biology of dancing
92. Describe health care in a historical time period

continued

93. Describe the anatomy and physiology of an organism
94. Design a book of experiments for young children
95. Design a butterfly garden
96. Design a college program for a nontraditional major that combines an interest in biology with an interest in another field of study
97. Design a concept map with missing words and see what words other students select to complete the map—explain why their choices are right or wrong
98. Design a follow the clues game
99. Design a forensic mystery lab
100. Design a landscaping plan for a 100X100 suburban lot to support wildlife

Visit the New York State Education Department Web site *http://www.nysatl.nysed.gov/Science/index.html* for more than 300 additional activities described in the learning experience and to view other sample learning experiences.

Teacher Resources Related to Instruction of Students with Disabilities

Access to Courses and Tests

The Board of Regents and the New York State Education Department have made a strong commitment to ensure students with disabilities are included in the total school program, meet high standards and are integrated with their non-disabled peers. Students with diverse learning needs may require accommodations, program modifications or adaptations of instructional methods and materials to maximize their learning and/or adjust for their learning capabilities.

In order for students with disabilities to be prepared to take the new Regents examinations they must be taught the same content areas and participate in classroom, school and statewide testing as do all other students. Students must also receive the appropriate special education supports, supplementary aids and services and testing accommodations they need in order to be successful in achieving and demonstrating their knowledge of the general education curriculum.

Safety Net for Students with Disabilities

The Board of Regents ensures a safety net for students with disabilities during the phase-in period of requiring all students to take and pass five Regents examinations in order to graduate. During the phase-in period, students receiving special education services and entering 9th grade between September 1996 and September 2000 will take each Regents exam required for their entering class. Students who fail a Regents exam required for their class will be allowed to take the Regents Competency Test (RCT) in that subject and receive a local diploma. The student may take the RCT before or after the Regents examination. For some students, an Individualized Education Program (IEP) diploma is available based on satisfactory completion of the goals and objectives on the student's IEP.

Resource Materials

Deciding What to Teach and How to Teach It: Connecting Students Through Curriculum and Instruction, Castagnera, E., Fisher, D., Rodifer, K., and Sax, C. Peak Parent Center, Colorado Springs, Colorado, 1998. (phone - 800 - 284-0251) www.peakparent.org

Adapting Curriculum and Instruction in Inclusive Classrooms: A Teacher's Desk Reference, 2nd Edition, The Center for School & Community Integration, Institute for the Study of Developmental Disabilities, Bloomington, Indiana, 1999 (phone - 812-855-6508)

Web sites with additional information regarding students with disabilities:

Special Education Training and Resource Centers (SETRC):
www.vesid.nysed.gov/lsn/setrc.htm

Effective Practices:
http://web.nysed.gov/vesid/sped/effective/effecmain.html

Resources on the inclusion of students with disabilities into general education classrooms:
http://systemschange.syr.edu

Assistive Technology:
http://go.to/trecenter