Purpose of the Test

- The End-of-Course (EOC) Biology Test measures students’ proficiency on the North Carolina Essential Standards for Biology, adopted by the North Carolina State Board of Education (NCSBE) in February 2010.

- NC State Board of Education Policy Requirements Regarding End-of-Course Assessments (TEST-003) directs schools to use the results from all operational EOC assessments as at least twenty percent (20%) of the student’s final course grade.

- Test results will be used for school and district accountability under the accountability model and for federal reporting purposes.

Curriculum Cycle

- February 2010: North Carolina State Board of Education adoption the North Carolina Essential Standards for Biology

- 2010–2011: Item development for the EOC Biology Test

- 2011–2012: Administration of stand-alone field tests of the EOC Biology Test

- 2012–2013: First operational administration of the EOC Biology Test (Edition 4)

Standards

- The unifying concepts within each set of essential standards provide a context for teaching both science content and scientific-process skill goals.

- Each essential standard has associated clarifying objectives. The Essential Standards and its clarifying objectives were written using the framework A Taxonomy for Learning, Teaching, and Assessing—A Revision of Bloom’s Taxonomy of Educational Objectives.

- The Essential Standards for Biology provide a deeper understanding of the life science content learned throughout grades K–8. The unifying concepts for Biology include:
  - Structure and Function of Living Organisms
  - Ecosystems
  - Evolution and Genetics
  - Molecular Biology

Developing Tests

- North Carolina educators were recruited and trained to write new items. The diversity among the item writers and their knowledge of the current standards was addressed during recruitment. Trained North Carolina educators also review items and suggest improvements, if necessary. The use of North Carolina educators to develop and review
items strengthens the content validity of the items.

- For an in-depth explanation of the test development process see North Carolina State Board Policy Multiple-Choice Test Development (TEST-013) or reference the Test Development Process: Item, Selection and Form Development document.

Prioritization of Standards
- Members of the North Carolina Department of Public Instruction (NCDPI)/Test Development Section invited North Carolina educators to collaborate and develop recommendations for a prioritization of the standards indicating the relative importance of each standard, the anticipated instructional time, and the appropriateness of the standard for different item formats. Subsequently, curriculum and test development staff from the NCDPI met to review the recommendations from the teacher panels and to adopt final weight distributions across the domains for each grade level. Table 1 describes the range of total items that will appear on the test.

Table 1: Weight Distributions for Biology

<table>
<thead>
<tr>
<th>Unifying Concept</th>
<th>Biology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure and Function of Living Organisms</td>
<td>18–22%</td>
</tr>
<tr>
<td>Ecosystems</td>
<td>18–22%</td>
</tr>
<tr>
<td>Evolution and Genetics</td>
<td>43–53%</td>
</tr>
<tr>
<td>Molecular Biology</td>
<td>15–19%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

- Appendix A (pages 5–6) shows the number of operational items by standard. Note that future coverage of standards could vary within the constraints of the content category weights in Table 1.

Cognitive Rigor and Item Complexity
- Test items are designed, developed, and classified to ensure that the cognitive rigor of the operational test forms align to the cognitive complexity and demands of the North Carolina Essential Standards for Biology. These items will require students to not only recall information, but also apply concepts and skills and make decisions.

Testing Structure and Test Administration Time
- Included in the total item counts are embedded field test items that will not be included in the score but will be used for purposes of developing items for future test forms.

<table>
<thead>
<tr>
<th>Course</th>
<th>Number of Operational Items</th>
<th>Number of Field Test Items</th>
<th>Total Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>60</td>
<td>5</td>
<td>65</td>
</tr>
</tbody>
</table>

- The EOC Biology Test is not designed as a speeded or power test. Students should have enough time to show what they know and are able to do. Thus, test administration times are based on analysis from item completion data. The NCDPI has estimated it will take about 2 hours (120 minutes) for most students to complete the EOC Biology Test. The
NCDPI requires all students be allowed ample opportunity to complete the test. The maximum amount of time allowed for regular administration is 3 hours (180 minutes) except for students with documented special needs requiring accommodations, such as Scheduled Extended Time. Refer to the North Carolina Test Coordinators’ Policies and Procedures Handbook for more information.

Types of Items and Supplemental Materials
- The EOC Biology Test consists of four-response-option multiple-choice items and technology-enhanced items (online administration only). All items will be worth one point each.
- A released form is available on the EOC webpage and through NCTest, the NCDPI’s online testing platform. The released forms are built using the same operational test specifications. A single released form may not reflect the full breadth and depth of grade level assessed standards, but it reflects the range of difficulty found on any EOC operational test form.
  - Released items may be used by Public School Units to help acquaint students with items. These materials must not be used for personal or financial gain.

Test Cycle and Delivery Mode
- The EOC tests must be administered during the last five (5) days (4x4/semester courses/summer school) or the last ten (10) days (traditional yearlong schedule) of the instructional period. According to North Carolina State Board of Education Policy Requirements Regarding End-of-Course Assessments (TEST-003), students who are enrolled for credit in courses in which EOC tests are required shall take the appropriate assessment at the completion of the course. Refer to the North Carolina Test Coordinators’ Policies and Procedures Handbook for exceptions and additional information.
- The EOC Biology Test is designed for an online administration. Online tests are delivered through NCTest, the NCDPI’s online testing platform. Paper/pencil versions of all online tests, including required online administrations, are available for technology hardship situations and for students with disabilities who need to test in the paper/pencil mode for accessibility.
- Schools must ensure every student participating in an online test for the North Carolina Testing Program completes the Online Assessment Tutorial for the associated test at least once at the school before test day. The tutorial provides students the opportunity to practice the mechanics of navigating through the testing platform, to become familiar with the tools, and to respond to the sample items. Refer to the North Carolina Test Coordinators’ Policies and Procedures Handbook for additional information.
- The EOC tests are only provided in English. Native language translation versions are not available. North Carolina G.S.§115C-81.45(a) requires all teachers and principals to conduct classes except foreign language classes in English.

Additional Resources
- Achievement level information is available on the EOC webpage.
Sample Individual Student Reports are available on the NCDPI Individual Student Reports (ISR) webpage.
Appendix A
Biology Number of Operational Items by Clarifying Objective

The following table shows the approximate number of operational items for each clarifying objective. Note that future coverage of objectives could vary within the constraints of the content category weights in Table 1. Some objectives not designated with tested items (i.e., “—”) may be a prerequisite standard, may be tested within the context of another standard or may be included as an embedded field test item.

<table>
<thead>
<tr>
<th>Biology Objective</th>
<th>Number of Operational Items by Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure and Functions of Living Organisms</td>
<td></td>
</tr>
<tr>
<td>1.1.1</td>
<td>2</td>
</tr>
<tr>
<td>1.1.2</td>
<td>1–2</td>
</tr>
<tr>
<td>1.1.3</td>
<td>3</td>
</tr>
<tr>
<td>1.2.1</td>
<td>2</td>
</tr>
<tr>
<td>1.2.2</td>
<td>1–3</td>
</tr>
<tr>
<td>1.2.3</td>
<td>1–2</td>
</tr>
<tr>
<td>Ecosystems</td>
<td></td>
</tr>
<tr>
<td>2.1.1</td>
<td>1–2</td>
</tr>
<tr>
<td>2.1.2</td>
<td>1–2</td>
</tr>
<tr>
<td>2.1.3</td>
<td>1–3</td>
</tr>
<tr>
<td>2.1.4</td>
<td>1–2</td>
</tr>
<tr>
<td>2.2.1</td>
<td>2–3</td>
</tr>
<tr>
<td>2.2.2</td>
<td>2–4</td>
</tr>
<tr>
<td>Evolution and Genetics</td>
<td></td>
</tr>
<tr>
<td>3.1.1</td>
<td>1–3</td>
</tr>
<tr>
<td>3.1.2</td>
<td>2–3</td>
</tr>
<tr>
<td>3.1.3</td>
<td>1–2</td>
</tr>
<tr>
<td>3.2.1</td>
<td>2–3</td>
</tr>
<tr>
<td>3.2.2</td>
<td>1</td>
</tr>
<tr>
<td>3.2.3</td>
<td>2–4</td>
</tr>
<tr>
<td>3.3.1</td>
<td>2–3</td>
</tr>
<tr>
<td>3.3.2</td>
<td>2</td>
</tr>
<tr>
<td>3.3.3</td>
<td>—</td>
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<tr>
<td>3.4.1</td>
<td>2–3</td>
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<td>2–3</td>
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<tr>
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<td>1–2</td>
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<tr>
<td>3.5.1</td>
<td>2–3</td>
</tr>
<tr>
<td>3.5.2</td>
<td>2</td>
</tr>
</tbody>
</table>
# Appendix A

## Biology Number of Operational Items by Clarifying Objective

<table>
<thead>
<tr>
<th>Biology Objective</th>
<th>Number of Operational Items by Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Biology</td>
<td></td>
</tr>
<tr>
<td>4.1.1</td>
<td>2</td>
</tr>
<tr>
<td>4.1.2</td>
<td>2–3</td>
</tr>
<tr>
<td>4.1.3</td>
<td>1</td>
</tr>
<tr>
<td>4.2.1</td>
<td>2</td>
</tr>
<tr>
<td>4.2.2</td>
<td>1–2</td>
</tr>
</tbody>
</table>