NCEXTEND1 Biology Alternate Assessment at Grade 10 North Carolina Test Specifications

Overview

The NCEXTEND1 Biology Alternate Assessment at Grade 10 measures students' proficiency on the North Carolina Extended Content Standards for Biology, adopted by the North Carolina State Board of Education (NCSBE) in July 2023. Assessment results will be used for school and district accountability based on state and federal accountability models and reporting requirements.

Implementation Cycle

July 2023:	North Carolina State Board of Education adoption of the North Carolina Extended Content Standards for Biology
2024–2025:	New items aligned to 2023 extended content biology standards developed and first operational administration of the NCEXTEND1 Biology Alternate Assessment at Grade 10 (Edition 3)

Item Development

In July 2024, approximately 45 North Carolina educators were recruited and trained to write new items for NCEXTEND1 science and biology tests at in-person workshops. The experience among item writers and their knowledge of the current standards were addressed during recruitment. Trained North Carolina educators also review items and suggest improvements, if necessary. The use of North Carolina educators to write and review items strengthens content validity evidence of NCEXTEND1 assessments.

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

Content Specification

In February 2024, a representative sample of 56 science educators representing the Public School Units (PSUs) across the State participated in an in-person test specification workshop. During the workshop, participants worked individually then in small groups to recommend test blueprint on the relative importance of each assessable objective and the total proportion of items addressing Disciplinary Core Ideas (DCI) only or DCI and SEPs (Science and Engineering Practices) for each assessment.

The final test blueprints presented in the tables below were derived by summarizing results from the in-person test specification workshop. Table 1 shows the proposed ranges for the weights and the number of operational items for the NCEXTEND1 Biology test by strand. As shown in Table 1, 25% to 35% of the total items in the NCEXTEND1 biology test will be aligned to objectives from the "From Molecules to Organisms - Structures and Processes" strand. For measurement purposes, because

“Biological Evolution - Unity and Diversity” was represented by only a single assessable objective, a decision was reached to combine this objective with the Heredity - Inheritance and Variation of Traits strand.

Table 1. NCEXTEND1 Biology at Grade 10 strand weight distributions

Domain	Strand	Objective	Science and Engineering Practices (Commonly Assessed)	Weight Distribution Range	Item Count Range
Life Science	From Molecules to Organisms - Structures and Processes	ECS.LS.Bio.1.3	Higher Frequency • Use Models • Construct an Explanation Lower Frequency • Analyze and Interpret Data • Use Mathematical and Computational Thinking	25–35%	6–9
		ECS.LS.Bio.1.4			
		ECS.LS.Bio.2.1			
		ECS.LS.Bio.2.2			
	Ecosystems - Interactions, Energy, and Dynamics	ECS.LS.Bio.4.2		20–30%	5–8
		ECS.LS.Bio.5.1			
		ECS.LS.Bio.5.2			
	Heredity - Inheritance and Variation of Traits and Biological Evolution – Unity and Diversity	ECS.LS.Bio.6.1		45–55%	11–14
		ECS.LS.Bio.6.2			
		ECS.LS.Bio.7.1			
		ECS.LS.Bio.8.1			
		ECS.LS.Bio.8.2			
		ECS.LS.Bio.10.1			
Total				**100%**	**25**

Cognitive Complexity Framework

The main DCI statements of the 2023 science standards are defined using the Revised Bloom's Taxonomy (RBT) complexity framework. The addition of Science and Engineering Practices (SEPs) with the Disciplinary Core Ideas (DCIs) introduces an additional layer of complexity when attempting to develop test items that are aligned to the full depth of NCEXTEND1 content standards. To best account for both sources of cognitive complexity for item and test development, the NCDPI have adopted an iterative cognitive complexity framework based on Range Achievement Level Descriptors (RALDs) combining both DCI and SEP.

During the first step of this iterative process, draft RALDs aligned to 2023 science standards were developed and reviewed by science measurement content experts at the North Carolina State University-Technical Outreach for Public Schools (NCSU-TOPS) and NCDPI Test Development. RALDs were written to align to the policy achievement levels at Not Proficient, Level 3, and Level 4. For the second step in May 2024, the NCDPI invited a panel of approximately 25 experienced science educators from across the state for an in-person workshop to review and provide additional feedback on the draft RALDs . The final step to establish RALDs will occur in summer of 2025 as part of the standard setting workshop. This will be managed and facilitated by an independent subject matter expert with panels of NC science educators.

Once adopted by the NCSBE, the RALDs will serve as the main cognitive complexity framework to evaluate the degree to which items on the NCEXTEND1 biology assessment represent the full depth and breadth of cognitive expectations of content standards.

Table 2 provides the current proposed range of items at each RALD for NCEXTEND1 biology tests. This table will be updated in August 2025 after the NCSBE's formal adoption of the RALDs and associated cut scores.

Table 2. NCEXTEND1 Biology at Grade 10 test items distribution by RALD

Proposed RALD	Distribution Range	Number of Operational Items Range
Not Proficient–Level 3	50–60%	12–15
Level 4	40–50%	10–13
Total	**100%**	**25**

Testing Format and Test Administration

The NCEXTEND1 Biology Alternate Assessment at Grade 10 is a teacher-facilitated online assessment that is administered individually to each student. There are three administration options available. The Individualized Education Program (IEP) team determines, based on the individual needs of the student, which of the following options is most appropriate:

- Option 1: teacher-facilitated online with the student recording responses on the device,

- Option 2: teacher-facilitated online with the teacher recording the student's responses on the device, or
- Option 3: teacher-facilitated online with paper test cards and the teacher recording the student's responses on the device.

All test items are three-response-option multiple-choice items presented as standalone items or as part of an item set. For items presented as part of an item set, students will be provided with reference material associated with all questions in the item set.

For each question, a student will have up to two attempts to provide the correct response. All multiple-choice items are presented with three answer choices. If the student does not provide the correct answer on the first attempt, the incorrect answer they selected is removed from the choices and the question is presented again with the remaining two response options during the second attempt. If the question is answered correctly in the first attempt, it is worth two points. If the question is answered correctly in the second attempt, it is worth one point.

Table 3 shows the final recommended range of the number of items aligned to DCI and the SEPs for each NCEXTEND1 Biology test form.

Table 3. NCEXTEND1 Biology at Grade 10 test items aligned to DCI and SEPs

	DCI Only	DCI and SEPs	Total
Item Distribution Range	35–50%	50–65%	100%
Item Count Range	8–13	12–16	25

Table 4 provides final test design with the number of operational and field-test items in the NCEXTEND1 Biology at Grade 10 test.

Table 4. Item counts for NCEXTEND1 Biology at Grade 10 test

Subject	Operational			Field-Test		
	Stand-Alone Items	Items (Item Sets)	Total Operational Items	Stand-Alone Items	Items (Item Sets)	Total Field-Test Items
Biology	19	6 (2)	25	0-5	0-5 (0-1)	5

Test Cycle and Delivery Mode

The NCEXTEND1 biology test must be administered during the last ten days (traditional yearlong schedule) of the instructional period. All students identified as taking the alternate assessment in membership at Grade 10 (according to NC Student Information System) are expected to participate with or without accommodations in the standard administration of the alternate assessment in biology.

The NCEXTEND1 biology test is provided only in English. Translated versions in other languages are not available. North Carolina G.S.§115C-81.45(a) requires all teachers and principals to conduct all classes other than foreign language classes in English.

All students are tested online and are expected to complete a practice activity before taking the assessment. The practice activity assists teachers with determining which administration option is most appropriate for their students. The practice activities help students become familiar with the testing platform and provide them with opportunities to practice responding to sample test questions. It is not necessary for students to complete the online practice activity if they will be administered the assessment using only the test cards with the assessor recording the responses on the device.

Supplemental Materials and Additional Resources

Upon request, students should be provided scratch paper and a writing utensil.

Released items for the NCEXTEND1 Biology Alternate Assessment at Grade 10 are available on the NCEXTEND1 webpage. The released items for NCEXTEND1 biology may not reflect the breadth and depth of standards assessed and/or the range of item difficulty on the NCEXTEND1 assessment. Released items may be used by public school units to acquaint students with test items. These materials must not be used for personal or financial gain, are copyrighted to the NCDPI, and cannot be uploaded into third-party applications.