

Biology 1 ([2000310](#)) Scope and Sequence

Unit	Standards	Suggested Time Frame
Unit 1: Approaches to Biological Research	SC.912.N.1.1 , SC.912.N.1.4 , SC.912.N.1.6 , SC.912.N.2.1 , SC.912.N.2.2	2 block days
Unit 2: Biological Molecules	SC.912.L.18.12 , SC.912.L.18.1 , SC.912.L.18.11	6 block days
Unit 3: Cell Theory	SC.912.L.14.1 , SC.912.L.14.3 , SC.912.L.14.4 , SC.912.N.1.3 , SC.912.N.3.1 , SC.912.N.3.4	3 block days
Unit 4: Cellular Structure and Function	SC.912.L.14.2 , SC.912.L.14.3 , SC.912.N.1.1 ,	3 block days
Unit 5: Cellular Respiration, Photosynthesis and Plants	SC.912.L.18.8 , SC.912.L.18.10 , SC.912.L.18.7 , SC.912.L.18.9 , SC.912.L.14.7	5 block days
Unit 6: Cellular Reproduction	SC.912.L.16.14 , SC.912.L.16.8 , SC.912.L.16.16 , SC.912.L.16.17 , HE.912.C.1.7	5 block days
Unit 7: Genetics	SC.912.L.16.1 , SC.912.L.16.2	6 block days
Unit 8: Nucleic Acids and Gene Expression	SC.912.L.16.3 , SC.912.L.16.9 , SC.912.L.16.5 , SC.912.L.16.4	5 block days
Unit 9: Biotechnology	SC.912.L.16.10	2 block days
Unit 10: Classification	SC.912.L.15.6 , SC.912.L.15.4 , SC.912.L.15.5 , SC.912.N.1.6	2 block days
Unit 11: Mechanisms of Evolution/ Mutations	SC.912.L.15.1 , SC.912.L.15.8 , SC.912.L.15.13 , SC.912.L.15.14 , SC.912.L.15.15 , SC.912.N.1.3 , SC.912.N.1.4 , SC.912.N.1.6 , SC.912.N.2.1 , SC.912.N.3.1 , SC.912.N.3.4	4 block days
Unit 12: Hominid Evolution	SC.912.L.15.10 , SC.912.N.1.4	3 block days
Unit 13: Energy Flow through Ecosystems	SC.912.E.7.1 , SC.912.L.17.9 , SC.912.L.17.2	3 block days
Unit 14: Population Dynamics	SC.912.L.17.5 , SC.912.L.17.2 , SC.912.L.17.4 , SC.912.N.1.4 , SC.912.N.1.3	4 block days
Unit 15: Human Impact	SC.912.L.17.11 , SC.912.L.17.8 , SC.912.L.17.20 , SC.912.L.17.13 , SC.912.N.1.3 , HE.912.C.1.3	2 block days
Unit 16: Human Systems	SC.912.L.14.26 , SC.912.L.14.36 , SC.912.L.16.13 , SC.912.L.14.52 , SC.912.L.14.6 , HE.912.C.1.3 , HE.912.C.1.5 , HE.912.C.1.7	7 block days

GENERAL NOTES

Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; [NSTA, 2007](#)).

Special Notes:

Instructional Practices

Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis:

1. Ensuring wide reading from complex text that varies in length.
2. Making close reading and rereading of texts central to lessons.
3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence.
4. Emphasizing students supporting answers based upon evidence from the text.
5. Providing extensive research and writing opportunities (claims and evidence).

Science and Engineering Practices ([NRC Framework for K-12 Science Education, 2010](#))

- Asking questions (for science) and defining problems (for engineering).
- Developing and using models.
- Planning and carrying out investigations.
- Analyzing and interpreting data.
- Using mathematics, information and computer technology, and computational thinking.
- Constructing explanations (for science) and designing solutions (for engineering).
- Engaging in argument from evidence.
- Obtaining, evaluating, and communicating information.

Additional standards/ practices that are to be taught in this course:

- [LAFS.910.SL.1.1](#): Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
 - a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
 - b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.
 - c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively

incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.

d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.

- [LAFS.910.SL.1.2](#): Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
- [LAFS.910.SL.1.3](#): Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
- [LAFS.910.SL.2.4](#): Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
- [LAFS.910.SL.2.5](#): Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
- [LAFS.910.RST.1.1](#): Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
- [LAFS.910.RST.1.2](#): Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
- [LAFS.910.RST.1.3](#): Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
- [LAFS.910.RST.2.4](#): Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
- [LAFS.910.RST.2.5](#): Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
- [LAFS.910.RST.2.6](#): Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
- [LAFS.910.RST.3.7](#): Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- [LAFS.910.RST.3.8](#): Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
- [LAFS.910.RST.3.9](#): Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
- [LAFS.910.RST.4.10](#): By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.
- [LAFS.910.WHST.1.1](#): Write arguments focused on discipline-specific content.
 - a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear

- relationships among the claim(s), counterclaims, reasons, and evidence.
- b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline appropriate form and in a manner that anticipates the audience’s knowledge level and concerns.
- c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- e. Provide a concluding statement or section that follows from or supports the argument presented.
- [LAFS.910.WHST.1.2](#): Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
 - a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
 - b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.
 - c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.
 - d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.
 - e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
 - f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
- [LAFS.910.WHST.2.4](#): Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- [LAFS.910.WHST.2.5](#): Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
- [LAFS.910.WHST.2.6](#): Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically.
- [LAFS.910.WHST.3.7](#): Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- [LAFS.910.WHST.3.8](#): Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
- [LAFS.910.WHST.3.9](#): Draw evidence from informational texts to support analysis, reflection, and research.
- [LAFS.910.WHST.4.10](#): Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or

two) for a range of discipline-specific tasks, purposes, and audiences.

- [MAFS.912.N-Q.1.1](#): Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. ★
- [MAFS.912.N-Q.1.3](#): Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. ★

Florida Standards for Mathematical Practice:

Integrate Common Core Standards for Mathematical Practice (MP) as applicable:

- [MAFS.K12.MP.1.1](#) Make sense of problems and persevere in solving them.
- [MAFS.K12.MP.2.1](#) Reason abstractly and quantitatively.
- [MAFS.K12.MP.3.1](#) Construct viable arguments and critique the reasoning of others.
- [MAFS.K12.MP.4.1](#) Model with mathematics.
- [MAFS.K12.MP.5.1](#) Use appropriate tools strategically.
- [MAFS.K12.MP.6.1](#) Attend to precision.
- [MAFS.K12.MP.7.1](#) Look for and make use of structure.
- [MAFS.K12.MP.8.1](#) Look for and express regularity in repeated reasoning.

English Language Development Standards:

- [ELD.K12.ELL.SC.1](#) English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science.
- [ELD.K12.ELL.SI.1](#) English language learners communicate for social and instructional purposes within the school setting.

English Language Development ELD Standards Special Notes Section:

Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate information, ideas and concepts for academic success in the content area of Science. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: <http://www.cpalms.org/uploads/docs/standards/eld/SC.pdf>

Additional Instructional Resources:

A.V.E. for Success Collection is provided by the Florida Association of School Administrators:
http://www.fasa.net/4DCGI/cms/review.html?Action=CMS_Document&DocID=139

CPALMS:

There are more than 1740 related instructional/educational resources, 393 student resources, and 116 parent resources available for this on CPALMS. Click on the following link to access them: <http://www.cpalms.org/Public/PreviewCourse/Preview/4258>