

USING TECHNOLOGY TO STUDY CELLULAR AND MOLECULAR BIOLOGY

North Dakota Science Content Standards: Grades 9 – 10

Lesson	Standard	Benchmark Expectations
2, 3	9-10.1.1.	Explain how models can be used to illustrate scientific principles.
2, 3	9-10.2.1.	Explain how scientific investigations can result in new ideas.
2, 3	9-10.2.3.	Identify questions and concepts that guide scientific investigations.
3	9-10.2.4.	Formulate a testable hypothesis for a simple investigation.
3	9-10.2.6.	Design and conduct a guided investigation.
3	9-10.2.7.	Maintain clear and accurate records of scientific investigations.
2, 3	9-10.2.8.	Analyze data found in tables, charts, and graphs to formulate conclusions.
3	9-10.4.2.	Relate the functions of cells in multi-cellular organisms to their cell type (e.g., nerve cells, blood cells, guard cells).
1, 2, 3	9-10.6.1.	Use appropriate technologies and techniques to solve a problem (e.g., computer-assisted tools, Internet, research skills).
1, 4	9-10.8.3.	Explain how individuals and groups, from different disciplines in and outside of science, contribute to science at different levels of complexity.

North Dakota Mathematics Content Standards: Grades 9 – 10

Lesson	Standard	Benchmark Expectations
1	9-10.1.1.	Express numbers between one-billionth and one billion in fraction, decimal, and verbal form; express numbers of all magnitudes in scientific notation.
1	9-10.1.7.	Apply basic properties of exponents to simplify algebraic expressions, i.e., power of a product, power of a power, products and quotients of powers, zero and negative exponents.
1, 2	9-10.1.8.	Apply estimation skills to predict realistic solutions to problems.
1	9-10.1.9.	Select and use a computational technique (i.e., mental calculation, paper-and-pencil, or technology) to solve problems involving real numbers.
1	9-10.1.10.	Explain the reasonableness of a problem's solution and the process used to obtain it.
2	9-10.3.1.	Construct appropriate displays of given data, i.e., circle graphs, bar graphs, histograms, stem-and-leaf plots, box-and-whisker plots, and scatter plots.
2	9-10.3.2.	Interpret a given visual representation (i.e., circle graphs, bar graphs, histograms, stem-and-leaf plots, box-and-whisker plots, and scatter plots) of a set of data.
1	9-10.4.1.	Select appropriate units and scales for problem situations involving measurement.

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1	9-10.4.5.	Use methods necessary to achieve a specified degree of precision and accuracy (i.e., appropriate number of significant digits) in measurement situations.
2	9-10.5.13.	Interpret a graphical representation of a real-world situation.
2	9-10.5.14.	Draw conclusions about a situation being modeled.

North Dakota ELA Content Standards: Grades 9 – 10

Grade 9

Lesson	Standard	Benchmark Expectations
4	9.1.1.	Choose a broad topic, state the problem or question.
4	9.1.2.	Formulate a preliminary thesis statement.
4	9.1.6.	Summarize information.
4	9.1.10.	Write research papers and presentations using a thesis and organized information.
All lessons	9.2.7.	Access prior knowledge to interpret meaning.
All lessons	9.2.8.	Read for a variety of purposes and intents e.g., to become life-long readers, to model forms of writing.
All lessons	9.2.15.	Build vocabulary by reading a variety of grade-level texts and applying new vocabulary.
3	9.3.1.	Write expository texts e.g., essays, directions, and letters.
3, 4	9.3.6.	Elaborate ideas through word choice and description using grade-level vocabulary.
3, 4	9.3.8.	Use supporting details.
3, 4	9.3.10.	Edit and revise compositions for proper mechanics and grammar, syntax, diction, and order.
3, 4	9.3.11.	Arrange paragraphs in a logical progression.
All lessons	9.4.4.	Engage in a group discussion.
All lessons	9.4.5.	Use critical listening skills i.e., reflection.
3	9.5.2.	Access media (e.g., television, film, music, electronic databases, videos, DVDs, comics, visual and performing arts, newspapers, and periodicals) for a variety of purposes.
3, 4	9.6.3.	Use conventions of punctuation.

Grade 10

4	10.1.1.	Form questions to focus research.
4	10.1.2.	Know ways to effectively search electronic databases e.g., defining key terms and using limiters to focus a search.
4	10.1.3.	Gather reliable information to support a thesis.
4	10.1.10.	Write a research paper.
All lessons	10.2.1.	Summarize information from nonfiction genres.

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All lessons	10.2.3.	Read for a variety of purposes and intents e.g., to become life-long readers, to model forms of writing.
3, 4	10.3.1.	Write expository texts including research papers.
3, 4	10.3.4.	Organize the ideas and details of a composition according to purpose.
3, 4	10.3.5.	Elaborate ideas through word choice and description using grade-level vocabulary.
3, 4	10.3.7.	Use a variety of supporting details.
3, 4	10.3.8.	Use language appropriate to the format of the composition.
3, 4	10.3.11.	Edit and revise compositions with attention to content.
All lessons	10.4.3.	Formulate questions in response to a verbal message.
3	10.5.2.	Use media (e.g., television, film, music, electronic databases, videos, DVDs, comics, visual and performing arts, newspapers, and periodicals) for a variety of purposes.

North Dakota Health Content Standards: Grades 9 – 12

Lesson	Standard	Benchmark
1, 3, 4	9-12.2.5.	Describe how prevention and treatment of health problems are influenced by research and medical advances (e.g., recent improvements in the treatment of cancer, diabetes, and heart disease; advanced surgical techniques; HIV/AIDS).