

NEBRASKA ALIGNMENT FOR NIH SUPPLEMENT THE BRAIN: UNDERSTANDING NEUROBIOLOGY THROUGH THE STUDY OF ADDICTION

<b>THE BRAIN: UNDERSTANDING NEUROBIOLOGY THROUGH THE STUDY OF ADDICTION</b>		
<b>Nebraska Science Standards– Grades 9 - 12</b>		
<b>Lesson</b>	<b>Standard</b>	<b>Example Indicator</b>
2, 3, 4	12.1.1.a	Predict and evaluate how change within a system affects that system.
2, 3, 4	12.1.2.a	Create a physical, mental, or mathematical model to show how objects and processes are connected.
2, 3, 4	12.1.2.b	Test the usefulness of a model by comparing its predictions to actual observations.
4	12.1.2.c	Understand that the way data are displayed affects interpretation.
3, 4	12.1.2.d	Evaluate the reasonableness of answers to problems.
3	12.1.2.e	Understand that larger well-chosen samples produce more accurate estimates of the characteristics of the total population.
3, 4	12.1.2.f	Understand that a correlation between two variables doesn't mean that either one causes the other.
3	12.1.3.c	Understand that measurement errors may affect results of calculations.
3, 4	12.1.3.d	Describe rate of change by comparing one measured quantity to another measured quantity.
2	12.1.4.a	Explain function by referring to form and explain form by referring to function.
1, 2, 3, 4	12.1.5.a	Identify the series of changes that occur in objects, organisms, and natural and human designed systems.
1, 2, 3, 4	12.1.5.b	Explain how a system at equilibrium is affected by change.
2, 3, 4	12.2.1.a	Formulate questions and identify concepts that guide scientific investigations.
2, 3, 4	12.2.1.b	Design and conduct scientific investigations.
1, 2, 3, 4	12.2.1.c	Use technology and mathematics to improve investigations and communications.
1, 2, 3, 4	12.2.1.d	Formulate and revise scientific explanations and models using logic and evidence.
1, 2, 3, 4	12.2.1.e	Recognize and analyze alternative explanations and models.
All lessons	12.2.1.f	Communicate and defend a scientific argument.
2, 3	12.4.1.a	Investigate and describe the form and function of subcellular structures that regulate cell activities.
2, 3	12.4.1.b	Investigate and describe cell functions (e.g. photosynthesis, respiration, cell division).
1, 2, 3	12.4.1.c	Investigate and understand that complex multicellular organisms are formed as highly organized arrangements of differentiated cells.
1, 2, 3, 4	12.4.6.a	Investigate and describe how nervous systems function in multicellular animals.

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1, 2, 3, 4	12.4.6.b	Investigate and describe how organisms respond to internal changes and external stimuli.
5	12.4.6.d	Investigate and understand that behavioral biology relates to humans since it provides links to psychology, sociology, and anthropology.
1	12.6.2.a	Explain how science advances with the introduction of new technology.
3, 4	12.6.2.b	Understand creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering.
4, 5	12.7.1.b	Investigate and explain how diseases are prevented, controlled, and cured.
4, 5	12.7.1.d	Investigate and analyze risks and benefits in making decisions about personal and community health.
4, 5	12.7.6.b	Investigate and understand that social issues and challenges may affect advancements in science and technology.
4	12.8.1.a	Demonstrate ethical scientific practices (e.g., informing research subjects about risks and benefits, humane treatment of animals, truthful reporting, public disclosure of work, and peer review).
1, 3, 4	12.8.1.c	Recognize science as one way of answering questions and explaining the natural world.
All lessons	12.8.2.b	Create scientific explanations consistent with experimental and observational evidence; make accurate predictions; strive to be logical; respect the rules of evidence; accept criticism; report methods and procedures; and make knowledge public.
1, 2, 4, 5	12.8.2.c	Understand that all scientific knowledge is, in principle, subject to change as new evidence becomes available.
1, 4, 5	12.8.3.b	Understand that changes in scientific knowledge evolve over time and almost always build on earlier knowledge.
1, 4, 5	12.8.3.c	Understand that some advancements in science and technology have long-lasting effects on society.

**Nebraska Mathematics Standards – Grades 9 - 12**

Lesson	Standard	Description
3, 4, 5	12.1.2	Express the equivalent forms of numbers using exponents, radicals, scientific notation, absolute values, fractions, decimals, and percents.
3, 4, 5	12.2.1	Solve theoretical and applied problems using numbers in equivalent forms, radicals, exponents, scientific notation, absolute values, fractions, decimals, and percents, ratios and proportions, order of operations, and properties of real numbers.
3, 4, 5	12.2.3	Perform estimations and computations of real numbers mentally, with paper and pencil, and with

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		technology.
<b>3</b>	<b>12.3.1</b>	Select and use measuring units, tools, and/or technology and explain the degree of accuracy and precision of measurements.
<b>4</b>	<b>12.5.1</b>	Select a sampling technique to gather data, analyze the resulting data, and make inferences.
<b>3, 4, 5</b>	<b>12.6.4.d</b>	Represent a problem in multiple formats (words, graphs, and symbols).

**Nebraska Reading / Writing Standards – Grade 12**

<b>Lesson</b>	<b>Standard</b>	<b>Example Indicator</b>
All lessons	<b>12.1.1.a</b>	Read selections to develop and answer literal, inferential/interpretive, and critical questions.
All lessons	<b>12.1.1.b</b>	Interpret information from graphs, charts, and diagrams, such as maps, blueprints, or schematics.
All lessons	<b>12.1.1.c</b>	Answer literal, inferential/interpretive, and critical questions.
All lessons	<b>12.1.2.b</b>	Use electronic resources (CD-ROM, software, online resources, and multimedia presentation tools).
All lessons	<b>12.1.6.b</b>	Analyze who, what, when, where, how, why, what if questions to interpret nonfiction text.
All lessons	<b>12.1.6.c</b>	Analyze information from charts, maps, and graphs.
All lessons	<b>12.2.1</b>	Write using standard English (conventions) for sentence structure, usage, punctuation, capitalization, and spelling.
All lessons	<b>12.2.2.d</b>	Write narrative, descriptive, and/or expository compositions.
All lessons	<b>12.2.4.a</b>	Develop narrative, persuasive, descriptive, technical, and/or expository writing for a designated audience and purpose.
All lessons	<b>12.2.4.b</b>	Write to describe, explain, persuade, inform, and/or entertain.
All lessons	<b>12.3.1.a</b>	Participate in and lead group discussions.
All lessons	<b>12.3.1.b</b>	Evaluate and monitor self and peer participation in group discussions.

**National Health Education Standards – Grades 9 – 12: cited from pre-publication document of National Health Education Standards, Pre K-12, American Cancer Society, December 2005 – August 2006**

<b>Lesson</b>	<b>Standard</b>	<b>Performance Indicator</b>
<b>4, 5</b>	<b>1.12.1</b>	Predict how healthy behaviors can impact health status.
<b>5</b>	<b>1.12.2</b>	Describe the interrelationships of emotional, intellectual, physical, and social health.

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4, 5	1.12.4	Analyze how genetics and family history can impact personal health.
4, 5	1.12.5	Propose ways to reduce or prevent injuries and health problems.
4, 5	1.12.7	Compare and contrast the benefits and barriers to practicing a variety of healthy behaviors.
4	1.12.8	Analyze personal susceptibility to injury, illness, or death if engaging in unhealthy behaviors.
4	1.12.9	Analyze the potential severity of injury or illness if engaging in unhealthy behaviors.
5	2.12.1	Analyze how family influences the health of individuals.
4, 5	2.12.8	Analyze the influence of personal values and beliefs on individual health practices and behaviors.
4, 5	2.12.9	Analyze how some health risk behaviors can influence the likelihood of engaging in unhealthy behaviors.
4, 5	2.12.10	Analyze how public health policies and government regulations can influence health promotion and disease.
4, 5	3.12.1	Evaluate the validity of health information, products, and services.
5	3.12.4	Determine when professional health services may be required.
5	4.12.1	Utilize skills for communicating effectively with family, peers, and others to enhance health.
4, 5	5.12.1	Examine barriers that can hinder healthy decision-making.
4, 5	5.12.2	Determine the value of applying a thoughtful decision-making process in health related situations.
4, 5	5.12.3	Justify when individual or collaborative decision-making is appropriate.
4, 5	5.12.5	Predict the potential short and long-term impact of each alternative on self and others.
4, 5	5.12.6	Defend the healthy choice when making decisions.
4, 5	5.12.7	Evaluate the effectiveness of health-related decisions.
4, 5	7.12.1	Analyze the role of individual responsibility for enhancing health.
5	7.12.2	Demonstrate a variety of healthy practices and behaviors that will maintain or improve the health of self and others.
4, 5	7.12.3	Demonstrate a variety of behaviors to avoid or reduce health risks to self and others.
4, 5	8.12.2	Demonstrate how to influence and support others to make positive health choices.
4, 5	8.12.4	Adapt health messages and communication techniques to a specific target audience.