

**USING TECHNOLOGY TO STUDY CELLULAR AND MOLECULAR BIOLOGY**

**Arkansas Biology Standards**

<b>Lesson</b>	<b>Standard</b>	<b>Descriptor</b>
4	<b>EBR.9.B.3</b>	Assess current world issues applying scientific themes (e.g., global changes in climate, epidemics, pandemics, ozone depletion, UV radiation, natural resources, use of technology, and public policy).
2, 3	<b>NS.10.B.4</b>	Summarize the guidelines of science: explanations are based on observations, evidence, and testing, hypotheses must be testable, understandings and/or conclusions may change with additional empirical data, and scientific knowledge must have peer review and verification before acceptance.
2	<b>NS.11.B.1</b>	Develop and explain the appropriate procedure, controls, and variables (dependent and independent) in scientific experimentation.
3	<b>NS.11.B.3</b>	Identify sources of bias that could affect experimental outcome.
2	<b>NS.11.B.4</b>	Gather and analyze data using appropriate summary statistics.
2, 3	<b>NS.11.B.5</b>	Formulate valid conclusions without bias.
2, 3	<b>NS.11.B.6</b>	Communicate experimental results using appropriate reports, figures, and tables.
1, 2	<b>NS.13.B.1</b>	Collect and analyze scientific data using appropriate mathematical calculations, figures, and tables.
1, 2, 3	<b>NS.13.B.2</b>	Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware).
2, 3	<b>NS.13.B.3</b>	Utilize technology to communicate research findings.
1, 3	<b>NS.14.B.1</b>	Compare and contrast biological concepts in pure science and applied science.
All lessons	<b>NS.14.B.4</b>	Explain how the cyclical relationship between science and technology results in reciprocal advancements in science and technology.

**Arkansas Anatomy and Physiology Standards**

<b>Lesson</b>	<b>Standard</b>	<b>Descriptor</b>
2, 3	<b>NS.16.AP.4</b>	Summarize the guidelines of science: explanations are based on observations, evidence, and testing, hypotheses must be testable, understandings and/or conclusions may change with additional empirical data, and scientific knowledge must have peer review and verification before acceptance.
2	<b>NS.17.AP.1</b>	Develop and explain the appropriate procedure, controls, and variables (dependent and independent) in scientific experimentation.
3	<b>NS.17.AP.3</b>	Identify sources of bias that could affect experimental outcome.
2	<b>NS.17.AP.4</b>	Gather and analyze data using appropriate summary statistics.
2, 3	<b>NS.17.AP.5</b>	Formulate valid conclusions without bias.

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2, 3	NS.17.AP.6	Communicate experimental results using appropriate reports, figures, and tables.
1, 2	NS.19.AP.1	Collect and analyze scientific data using appropriate mathematical calculations, figures, and tables.
1, 2, 3	NS.19.AP.2	Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware).
2, 3	NS.19.AP.3	Utilize technology to communicate research findings.
1, 3	NS.20.AP.1	Compare and contrast human biology concepts in <i>pure science</i> and <i>applied science</i> .
All lessons	NS.20.AP.3	Explain how the cyclical relationship between science and technology results in reciprocal advancements in science and technology.

**Arkansas Algebra I Standards**

Lesson	Standard	Descriptor
1	LA.1.AI.4	Solve problems involving <i>scientific notation</i> .
1	SEI.2.AI.5	Solve real world problems that involve a combination of rates, <i>proportions</i> and percents.
1	SEI.2.AI.8	Communicate real world problems graphically, algebraically, numerically and verbally.
2	LF.3.AI.4	Identify <i>independent variables</i> and <i>dependent variables</i> in various representational modes: words, symbols, and/or graphs.

**Arkansas English Language Arts Standards: Grades 9 & 10**

Lesson	Standard	Descriptor
All lessons	OV.1.9.1 OV.1.10.1	Adjust oral language to audience and appropriately apply the rules of standard English.
All lessons	OV.1.9.2 OV.1.10.2	Prepare and participate in structured discussions, such as panel discussion.
All lessons	OV.2.9.4 OV.2.10.4	Demonstrate attentive, reflective, and critical listening skills to respond to and interpret speaker's message.
3, 4	W.4.9.4 W.4.10.3	Write clear and varied sentences.
3, 4	W.4.9.5 W.4.10.4	Elaborate ideas clearly and accurately through word choice, vivid description, and selected information.
3, 4	W.4.9.6 W.4.10.5	Adapt content vocabulary, <i>voice</i> , and <i>tone</i> to audience, purpose, and situation.
3, 4	W.4.9.8 W.4.10.7	Revise content of writing for central idea, elaboration, unity, and organization.
3, 4	W.4.9.9	Revise <i>style</i> of writing for selected vocabulary, selected information, sentence variety, <i>tone</i> and <i>voice</i> .

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	<b>W.4.10.8</b>	
3, 4	<b>W.4.9.12</b> <b>W.4.10.11</b>	Apply grammatical conventions for capitalization, punctuation, formatting, and spelling.
3, 4	<b>W.5.9.1</b> <b>W.5.10.1</b>	Adjust levels of formality, <i>style</i> , and <i>tone</i> when composing for different audiences.
3, 4	<b>W.5.9.9</b> <b>W.5.10.9</b>	Write across the curriculum.
3, 4	<b>W.6.9.8</b> <b>W.6.10.4</b>	Apply conventional spelling to all pieces.
3, 4	<b>R.9.9.5</b> <b>R.9.10.5</b>	Draw inferences from a sentence or a paragraph (including conclusions, generalizations, and predictions) and support them with text evidence.
3, 4	<b>R.9.9.8</b> <b>R.9.10.7</b>	Summarize and paraphrase structures in informational and literary texts, including relationships among concepts and details.
3, 4	<b>R.9.9.13</b> <b>R.9.10.12</b>	Identify and discuss a position using concepts gained from reading.
1, 3, 4	<b>R.10.9.1</b> <b>R.10.10.1</b>	Read across the curriculum a variety of such <i>practical texts</i> as advertisements, warranties, manuals, handbooks, agendas, labels, warnings and directions.
<b>All lessons</b>	<b>R.11.9.1</b> <b>R.11.10.1</b>	Expand vocabulary through reading, listening, and discussing.
3, 4	<b>IR.12.9.2</b> <b>IR.12.10.2</b>	Establish a focus for research and design a research plan to answer a specific question (9) / set of questions (10).
3, 4	<b>IR.12.9.12</b> <b>IR.12.10.12</b>	Create research products such as: oral presentation, reports, and essays.
<b>Arkansas Health and Safety Standards: Grades 9 – 12</b>		
<b>Lesson</b>	<b>Standard</b>	<b>Descriptor</b>
3	<b>DP.2.HW.1</b>	Analyze communicable diseases as being viral or bacterial diseases.
3	<b>DP.2.HW.2</b>	Identify ways to prevent and treat communicable diseases (e.g., vaccines, medications).