RESPIRATORY SCIENCE STANDARDS

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VISION

All Nevadans ready for success in the 21st century

MISSION

To improve student achievement and educator effectiveness by ensuring opportunities, facilitating learning, and promoting excellence

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ACKNOWLEDGEMENTS

The development of Nevada career and technical standards and assessments is a collaborative effort sponsored by the Office of Career Readiness, Adult Learning & Education Options at the Department of Education and the Career and Technical Education Consortium of States. The Department of Education relies on teachers and industry representatives who have the technical expertise and teaching experience to develop standards and performance indicators that truly measure student skill attainment. Most important, however, is recognition of the time, expertise and great diligence provided by the writing team members in developing the career and technical standards for Respiratory Science.

STANDARDS DEVELOPMENT MEMBERS

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BUSINESS AND INDUSTRY VALIDATION

All CTE standards developed through the Nevada Department of Education are validated by business and industry through one or more of the following processes: (1) the standards are developed by a team consisting of business and industry representatives; or (2) a separate review panel was coordinated with industry experts to ensure the standards include the proper content; or (3) the adoption of nationally-recognized standards endorsed by business and industry.

The Respiratory Science standards were validated through active participation of business and industry representatives on the development team.

PROJECT COORDINATOR

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INTRODUCTION

The standards in this document are designed to clearly state what the student should know and be able to do upon completion of an advanced high school Respiratory Science program. These standards are designed for a three-credit course sequence that prepares the student for a technical assessment directly aligned to the standards.

These exit-level standards are designed for the student to complete all standards through their completion of a program of study. These standards are intended to guide curriculum objectives for a program of study.

The standards are organized as follows:

Content Standards are general statements that identify major areas of knowledge, understanding, and the skills students are expected to learn in key subject and career areas by the end of the program.

Performance Standards follow each content standard. Performance standards identify the more specific components of each content standard and define the expected abilities of students within each content standard.

Performance Indicators are very specific criteria statements for determining whether a student meets the performance standard. Performance indicators may also be used as learning outcomes, which teachers can identify as they plan their program learning objectives.

The crosswalk and alignment section of the document shows where the performance indicators support the Nevada Academic Content Standards in Science (based on the Next Generation Science Standards) and the English Language Arts and Mathematics (based on the Common Core State Standards). Where correlation with an academic content standard exists, students in the Respiratory Science program perform learning activities that support, either directly or indirectly, achievement of the academic content standards that are listed.

All students are encouraged to participate in the career and technical student organization (CTSO) that relates to their program area. CTSOs are co-curricular national associations that directly enforce learning in the CTE classroom through curriculum resources, competitive events, and leadership development. CTSOs provide students the ability to apply academic and technical knowledge, develop communication and teamwork skills, and cultivate leadership skills to ensure college and career readiness.

The Employability Skills for Career Readiness identify the “soft skills” needed to be successful in all careers, and must be taught as an integrated component of all CTE course sequences. These standards are available in a separate document.

The **Standards Reference Code** is only used to identify or align performance indicators listed in the standards to daily lesson plans, curriculum documents, or national standards.

Program Name: Respiratory Science Standards Reference Code: **RPSCI**

Example: RPSCI.2.3.4

Standards	Content Standard	Performance Standard	Performance Indicator
Respiratory Science	2	3	4

CONTENT STANDARD 1.0 : UNDERSTAND MEDICAL TERMINOLOGY

PERFORMANCE STANDARD 1.1 : DEMONSTRATE KNOWLEDGE OF MEDICAL TERMINOLOGY

1.1.1 Interpret roots, suffixes, and prefixes of medical terminology
1.1.2 Investigate combining forms
1.1.3 Recognize body planes, directional terms, quadrants, and cavities
1.1.4 Construct sentences using medical terminology
1.1.5 Identify, articulate, interpret, and accurately spell medical terminology
1.1.6 Demonstrate communication skills using the terminology applicable to Respiratory Science

PERFORMANCE STANDARD 1.2 : IDENTIFY AND UTILIZE ACRONYMS AND ABBREVIATIONS

1.2.1 Interpret and correctly utilize medical abbreviations within documentation
1.2.2 Interpret and correctly utilize medical symbols within documentation
1.2.3 Identify the Joint Commission list of approved medical abbreviations
1.2.4 Interpret and correctly utilize medical acronyms within documentation

PERFORMANCE STANDARD 1.3 : DIFFERENTIATE TECHNICAL UNITS OF MEASURE

1.3.1 Apply the 24-hour clock to healthcare
1.3.2 Utilize mathematical measurement terminology related to healthcare procedures

CONTENT STANDARD 2.0 : DEMONSTRATE METHODS OF COMMUNICATION IN THE HEALTHCARE SETTING	
PERFORMANCE STANDARD 2.1 : UTILIZE APPROPRIATE VERBAL AND NONVERBAL COMMUNICATION SKILLS	
2.1.1	Recognize the elements of oral communication using a sender, receiver, feedback process
2.1.2	Interpret verbal and nonverbal communications
2.1.3	Recognize barriers to communication
2.1.4	Apply tools to overcome communication barriers
2.1.5	Demonstrate effective communication skills
2.1.6	Use accepted medical terminology to communicate
2.1.7	Report relevant information in sequential order
2.1.8	Practice confidentiality when communicating
PERFORMANCE STANDARD 2.2 : UTILIZE WRITTEN AND ELECTRONIC COMMUNICATION	
2.2.1	Recognize elements of written and electronic communication
2.2.2	Describe methods for planning and organizing written documents and assessments
2.2.3	Determine which communication format is appropriate in a given situation
2.2.4	Demonstrate industry standards in written and electronic communication and documentation

CONTENT STANDARD 3.0 : DISCUSS ANATOMY AND PHYSIOLOGY

PERFORMANCE STANDARD 3.1 : RECALL ANATOMY

- 3.1.1 Identify body systems
- 3.1.2 Generalize the anatomical structure and location of each system
- 3.1.3 Correctly identify the anatomical position
- 3.1.4 Identify structures of various anatomical components on diagrams
- 3.1.5 Relate body planes, directional terms, quadrants, and cavities to the human body
- 3.1.6 Identify muscle groups and their origin, insertion, and action

PERFORMANCE STANDARD 3.2 : APPLY CONCEPTS OF PHYSIOLOGY

- 3.2.1 Generalize the functions of each body system
- 3.2.2 Compare and contrast diffusion and osmosis
- 3.2.3 Define homeostasis and its principal mechanisms at the cellular level
- 3.2.4 Describe the importance of proteins in cell function and structure
- 3.2.5 Explain mitosis, meiosis, and DNA

CONTENT STANDARD 4.0 : UNDERSTAND MATHEMATICS IN HEALTHCARE

PERFORMANCE STANDARD 4.1 : APPLY MATHEMATICS IN HEALTHCARE PRACTICE

4.1.1 Apply mathematical computations related to healthcare procedures
4.1.2 Apply mathematical principles to problems involving dosage calculations
4.1.3 Evaluate, solve, and analyze mathematical situations using algebraic properties and symbols
4.1.4 Use ratios, proportions, and percentages to solve mathematical equations
4.1.5 Compute temperature scales and conversions

CONTENT STANDARD 5.0 : UNDERSTAND APPLIED RESPIRATORY SCIENCE
PERFORMANCE STANDARD 5.1 : APPLY MICROBIOLOGY IN HEALTHCARE PRACTICE
5.1.1 Define cellular structure 5.1.2 Classify microorganisms 5.1.3 Compare and contrast anaerobic and aerobic functions 5.1.4 Identify and summarize pathogens
PERFORMANCE STANDARD 5.2 : APPLY CHEMISTRY IN HEALTHCARE PRACTICE
5.2.1 Define atomic structure 5.2.2 Describe the purpose of the periodic table 5.2.3 Differentiate between an atom, an element, and a compound 5.2.4 Identify states of matter 5.2.5 Demonstrate the ability to balance chemical equations
PERFORMANCE STANDARD 5.3 : APPLY PHYSICS IN HEALTHCARE PRACTICE
5.3.1 Explain the concept of Henry's Law 5.3.2 Explain the concept of Graham's Law 5.3.3 Explain the concept of Fick's Law 5.3.4 Explain the concept of Gay-Lussac's Law 5.3.5 Explain the concept of Boyle's Law 5.3.6 Explain the concept of the combined gas law 5.3.7 Recognize concepts of laminar and turbulent flow 5.3.8 Understand the concept of humidity and humidity deficit as it relates to homeostasis

CONTENT STANDARD 6.0 : UNDERSTAND CARDIOPULMONARY ANATOMY AND PHYSIOLOGY

PERFORMANCE STANDARD 6.1 : COMPREHEND CARDIOPULMONARY ANATOMY

6.1.1 Summarize the stages of lung development from fetus to adult
6.1.2 Summarize the stages of heart development from fetus to adult
6.1.3 Examine the relationship between lung and heart development
6.1.4 Identify and describe the primary and accessory muscles of breathing
6.1.5 Discuss the innervation of the major muscles of ventilation
6.1.6 Identify the main structures of the thorax, and describe their function in ventilation
6.1.7 Identify components of the respiratory system
6.1.8 Identify components of the cardiovascular system
6.1.9 Describe blood and explain its composition

PERFORMANCE STANDARD 6.2 : COMPREHEND CARDIOPULMONARY PHYSIOLOGY

6.2.1 Explain the function of the lungs
6.2.2 Explain the function of the heart
6.2.3 Define blood pressure
6.2.4 Understand internal and external respiration
6.2.5 Summarize the components and function of the mucocilliary escalator
6.2.6 Explore the concept of gas exchange
6.2.7 Differentiate between fetal and adult circulation
6.2.8 Identify electrical and mechanical events of the heart in a normal cardiac cycle
6.2.9 Define the Kreb's cycle and discuss its relationship to oxygen use in the cells
6.2.10 Trace the path of a red blood cell throughout the body
6.2.11 Understand respiratory system compliance, resistance, and elastance

PERFORMANCE STANDARD 6.3 : COMPREHEND CARDIOPULMONARY PATHOPHYSIOLOGY

6.3.1 Define obstructive disease processes
6.3.2 Define restrictive disease processes
6.3.3 Define cardiovascular disease processes
6.3.4 Summarize sleep disorders
6.3.5 Examine abnormal conditions of the cardiopulmonary system

CONTENT STANDARD 7.0 : UNDERSTAND THE ROLES AND RESPONSIBILITIES OF INDIVIDUAL MEMBERS AS PART OF THE HEALTHCARE TEAM	
PERFORMANCE STANDARD 7.1 : DESCRIBE CHARACTERISTICS OF AN EFFECTIVE HEALTHCARE TEAM	
7.1.1	Explain characteristics of effective teams
7.1.2	Research the roles and responsibilities of healthcare team members
7.1.3	Model effective healthcare team behavior
PERFORMANCE STANDARD 7.2 : UNDERSTAND METHODS FOR BUILDING POSITIVE TEAM RELATIONSHIPS	
7.2.1	Recognize methods for building positive team relationships
7.2.2	Demonstrate effective collaboration and communication skills
7.2.3	Recognize conditions that may lead to conflict
7.2.4	Apply techniques for managing team conflict resolution
7.2.5	Demonstrate conflict resolution and reinforce positive outcomes
7.2.6	Analyze attributes and attitudes of an effective leader
PERFORMANCE STANDARD 7.3 : COMPARE AND CONTRAST ROLES AND RESPONSIBILITIES OF VARIOUS MEMBERS OF THE HEALTHCARE TEAM	
7.3.1	Discuss potential career paths for respiratory care practitioners
7.3.2	Compare and contrast the roles of the therapeutic team
7.3.3	Describe the roles of nursing
7.3.4	Compare and contrast the roles of the physician and physician assistant
7.3.5	Describe the roles of nutrition
7.3.6	Describe the roles of radiology
7.3.7	Describe the roles of cardiology
7.3.8	Describe the roles of laboratory
7.3.9	Describe the roles of pharmacy
7.3.10	Describe the roles of the pre-hospital care team
PERFORMANCE STANDARD 7.4 : DIFFERENTIATE HEALTHCARE SYSTEMS	
7.4.1	Compare and contrast palliative and hospice care
7.4.2	Distinguish between durable medical equipment suppliers and home care companies
7.4.3	Differentiate between various long term care facilities
7.4.4	Describe patient rehabilitative services
7.4.5	Identify non-traditional healthcare settings
7.4.6	Compare and contrast differences of levels of care provided at acute care hospitals

CONTENT STANDARD 8.0 : UNDERSTAND THE LEGAL AND ETHICAL RESPONSIBILITIES WITHIN THE HEALTHCARE SYSTEM	
PERFORMANCE STANDARD 8.1 : PERFORM DUTIES ACCORDING TO REGULATIONS, POLICIES AND LAWS	
8.1.1	Describe laws covering the practice of healthcare professionals
8.1.2	Compare licensure, credentialing, and legislated scope of practice for respiratory care practitioners
8.1.3	Explain the Patient's Bill of Rights
8.1.4	Explain the various forms of consent
8.1.5	Describe advance directive
8.1.6	Explain practices that could result in malpractice, liability, and/or negligence
8.1.7	Analyze legal responsibilities and limitations of healthcare providers
8.1.8	Apply standards for Health Insurance Portability and Accountability Act (HIPAA)
8.1.9	Recognize common threats to confidentiality
8.1.10	Demonstrate procedures for accurate documentation and recordkeeping
PERFORMANCE STANDARD 8.2 : EVALUATE THE ROLE OF ETHICAL ISSUES IMPACTING HEALTHCARE	
8.2.1	Identify ethical viewpoints in decision making
8.2.2	Explore ethical issues impacting healthcare
8.2.3	Compare personal, professional, and organizational ethics
PERFORMANCE STANDARD 8.3 : DEMONSTRATE PROFESSIONAL AND ETHICAL STANDARDS IMPACTING HEALTHCARE	
8.3.1	Identify professional behaviors in healthcare
8.3.2	Identify medical practices that relate to diverse populations
8.3.3	Discuss the importance of respectful and empathetic interactions with diverse populations
8.3.4	Describe the influence of diversity on healthcare practices
8.3.5	Identify procedures for reporting violations of ethical standards

CONTENT STANDARD 9.0 : RECOGNIZE SAFE PRACTICES IN PATIENT CARE

PERFORMANCE STANDARD 9.1 : DESCRIBE INFECTION CONTROL PROCEDURES

- 9.1.1 Define sterilization, disinfectant, and antiseptic
- 9.1.2 Describe mechanisms of action of various sterilization agents
- 9.1.3 List the steps to prepare equipment for sterilization
- 9.1.4 Discuss the different methods of disinfection and sterilization
- 9.1.5 Describe how to properly enter and exit an isolation room
- 9.1.6 Complete the American Heart Association (AHA) bloodborne pathogen training

PERFORMANCE STANDARD 9.2 : SUMMARIZE SAFETY PRACTICES IN HEALTHCARE

- 9.2.1 Identify National Patient Safety Goals
- 9.2.2 Demonstrate Rescue Alert Contain Evacuate (RACE)
- 9.2.3 Demonstrate Pull Aim Squeeze Sweep (PASS)
- 9.2.4 Demonstrate proper body mechanics
- 9.2.5 Discuss workplace ergonomics
- 9.2.6 Identify safety practices in the healthcare environment
- 9.2.7 Recognize healthy practices for the healthcare provider

CONTENT STANDARD 10.0 : UNDERSTAND PATIENT ASSESSMENT TECHNIQUES AND FINDINGS

PERFORMANCE STANDARD 10.1 : OBTAIN PATIENT DATA

10.1.1 Demonstrate the process to review a patient's chart
10.1.2 Extract pertinent information from a patient's chart
10.1.3 Identify methods to obtain sputum
10.1.4 Define auscultation and its purpose
10.1.5 State the normal temperature of the body in Celsius and Fahrenheit
10.1.6 Demonstrate auscultation techniques in identifying various heart and lungs sounds
10.1.7 Demonstrate techniques for obtaining vital signs

PERFORMANCE STANDARD 10.2 : INTERPRET PATIENT ASSESSMENT

10.2.1 Discuss the importance of the medical history and the patient interview
10.2.2 Classify sputum characteristics
10.2.3 Define and discuss blood pressure
10.2.4 Differentiate between hypothermia and hyperthermia
10.2.5 Evaluate additional diagnostic test results

PERFORMANCE STANDARD 10.3 : DRAW CONCLUSIONS FROM PATIENT ASSESSMENT

10.3.1 Discuss patient communication to include sender, receiver, and feedback
10.3.2 Discuss effective patient education
10.3.3 Define Situation Background Assessment and Recommendation (SBAR)
10.3.4 Differentiate normal and abnormal breath sounds by auscultation

CONTENT STANDARD 11.0 : APPLY TECHNICAL SKILLS REQUIRED FOR RESPIRATORY SCIENCE CAREERS	
PERFORMANCE STANDARD 11.1 : IDENTIFY APPROPRIATE TOOLS FOR RESPIRATORY SCIENCE	
11.1.1	Obtain Basic Life Support (BLS) certification through the American Heart Association
11.1.2	Identify appropriate tools to measure and record vital signs
11.1.3	Identify artificial airways
11.1.4	Identify oxygen delivery devices
11.1.5	Identify the parts and use of a stethoscope

CONTENT STANDARD 12.0 : DISTINGUISH POPULATION PROFICIENCIES

PERFORMANCE STANDARD 12.1 : APPLY CONCEPTS OF POPULATION PROFICIENCIES

12.1.1 Compare and contrast how to educate patients across the age spectrum

12.1.2 Differentiate communication techniques between age-specific populations

12.1.3 Investigate population diversity

CONTENT STANDARD 13.0 : EXAMINE EVIDENCE-BASED MEDICINE
PERFORMANCE STANDARD 13.1 : RECOGNIZE QUALITY RESPIRATORY CARE
13.1.1 Recognize the scientific method
13.1.2 Define evidence-based medicine in respiratory care
13.1.3 Investigate clinical practice guidelines
13.1.4 Interpret respiratory care protocols
PERFORMANCE STANDARD 13.2 : APPLY EVIDENCE-BASED MEDICINE IN RESPIRATORY SCIENCE
13.2.1 Draw conclusions from evidence-based medicine
13.2.2 Apply principles of evidence-based medicine
13.2.3 Use findings from evidence-based medicine

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CROSSWALKS AND ALIGNMENTS

CROSSWALKS (ACADEMIC STANDARDS)

The crosswalk of the Respiratory Science Standards shows links to the Nevada Academic Content Standards in Science (based on the Next Generation Science Standards – Disciplinary Core Ideas Arrangement) and the English Language Arts and Mathematics (based on the Common Core State Standards). The crosswalk identifies the performance indicators in which the learning objectives in the Respiratory Science program support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the Nevada Academic Content Standards in Science, English Language Arts, and Mathematics.

ALIGNMENTS (MATHEMATICAL PRACTICES)

In addition to correlation with the Nevada Academic Content Standards for Mathematics, many performance indicators support the Mathematical Practices. The following table illustrates the alignment of the Respiratory Science Standards Performance Indicators and the Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Respiratory Science program support academic learning.

ALIGNMENTS (SCIENCE AND ENGINEERING PRACTICES)

In addition to correlation with the Nevada Academic Content Standards for Science, many performance indicators support the Science and Engineering Practices. The following table illustrates the alignment of the Respiratory Science Standards Performance Indicators and the Science and Engineering Practices. This alignment identifies the performance indicators in which the learning objectives in the Respiratory Science program support academic learning.

CROSSWALKS (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Respiratory Science Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Respiratory Science program support the Common Career Technical Core. The Common Career Technical Core defines what students should know and be able to do after completing instruction in a program of study. The Respiratory Science Standards are crosswalked to the Health Science Career Cluster™ and the Therapeutics Career Pathway.

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CROSSWALK OF RESPIRATORY SCIENCE STANDARDS AND THE NEVADA ACADEMIC CONTENT STANDARDS

CONTENT STANDARD 1.0: UNDERSTAND MEDICAL TERMINOLOGY

Performance Indicators	Nevada Academic Content Standards
1.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **English Language Arts: Speaking and Listening Standards** SL.11-12.1a 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.
1.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
1.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
1.1.6	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CONTENT STANDARD 2.0: DEMONSTRATE METHODS OF COMMUNICATION IN THE HEALTHCARE SETTING

Performance Indicators	Nevada Academic Content Standards
2.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
2.1.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
2.2.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

CONTENT STANDARD 3.0: DISCUSS ANATOMY AND PHYSIOLOGY

Performance Indicators	Nevada Academic Content Standards
3.2.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
3.2.3	**Science: HS-From Molecules to Organisms: Structures and Processes** HS-LS1-3 Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
3.2.4	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
3.2.5	**English Language Arts: Language Standards** L.11-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. **Science: HS-From Molecules to Organisms: Structures and Processes** HS-LS1-4 Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms. **Science: HS-Heredity: Inheritance and Variation of Traits** HS-LS3-1 Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.

CONTENT STANDARD 4.0: UNDERSTAND MATHEMATICS IN HEALTHCARE

Performance Indicators	Nevada Academic Content Standards
4.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

CONTENT STANDARD 5.0: UNDERSTAND APPLIED RESPIRATORY SCIENCE

Performance Indicators	Nevada Academic Content Standards
5.1.3	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
5.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks. **Science: HS-Matter and Its Interactions** HS-PS1-1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.
5.2.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
5.3.1	**English Language Arts: Language Standards** L.11-12.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CONTENT STANDARD 6.0: UNDERSTAND CARDIOPULMONARY ANATOMY AND PHYSIOLOGY

Performance Indicators	Nevada Academic Content Standards
6.1.1	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6.2.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
6.2.6	**English Language Arts: Reading Standards for Informational Text** RI.11-12.2 Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text. **English Language Arts: Speaking and Listening Standards** RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
6.2.9	**Science: HS-From Molecules to Organisms: Structures and Processes** HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

CONTENT STANDARD 7.0: UNDERSTAND THE ROLES AND RESPONSIBILITIES OF INDIVIDUAL MEMBERS AS PART OF THE HEALTHCARE TEAM

Performance Indicators	Nevada Academic Content Standards
7.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
7.1.2	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
7.2.6	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 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.
7.3.1	**English Language Arts: Speaking and Listening Standards** SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

CONTENT STANDARD 8.0: UNDERSTAND THE LEGAL AND ETHICAL RESPONSIBILITIES WITHIN THE HEALTHCARE SYSTEM

Performance Indicators	Nevada Academic Content Standards
8.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
8.1.7	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 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.
8.2.2	**English Language Arts: Reading Standards for Informational Text** RI.11-12.3 Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

CONTENT STANDARD 9.0: RECOGNIZE SAFE PRACTICES IN PATIENT CARE

Performance Indicators	Nevada Academic Content Standards
9.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9.2.2	**English Language Arts: Speaking and Listening Standards** SL.11-12.6 Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11–12 Language standards 1 and 3 on page 54 for specific expectations.)

CONTENT STANDARD 10.0: UNDERSTAND PATIENT ASSESSMENT TECHNIQUES AND FINDINGS

Performance Indicators	Nevada Academic Content Standards
10.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
10.2.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
10.2.5	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

CONTENT STANDARD 12.0: DISTINGUISH POPULATION PROFICIENCIES

Performance Indicators	Nevada Academic Content Standards
12.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. **English Language Arts: Speaking and Listening Standards** SL.11-12.1a 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.
12.1.3	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.7 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

CONTENT STANDARD 13.0: EXAMINE EVIDENCE-BASED MEDICINE

Performance Indicators	Nevada Academic Content Standards
13.1.1	**English Language Arts: Reading Standards for Literacy in Science and Technical Subjects** RST.11-12.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
13.1.4	**English Language Arts: Writing Standards for Literacy in Science and Technical Subjects** WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

ALIGNMENT OF RESPIRATORY SCIENCE STANDARDS AND THE MATHEMATICAL PRACTICES

Mathematical Practices	Respiratory Science Performance Indicators
1. Make sense of problems and persevere in solving them.	1.3.2, 4.1.1
2. Reason abstractly and quantitatively.	4.1.3
3. Construct viable arguments and critique the reasoning of others.	4.1.3
4. Model with mathematics.	4.1.5
5. Use appropriate tools strategically.	4.1.2, 11.1.2
6. Attend to precision.	4.1.2, 10.1.6, 10.1.7
7. Look for and make use of structure.	5.2.1
8. Look for and express regularity in repeated reasoning.	5.2.5

ALIGNMENT OF RESPIRATORY SCIENCE STANDARDS AND THE SCIENCE AND ENGINEERING PRACTICES

Science and Engineering Practices	Respiratory Science Performance Indicators
1. Asking questions (for science) and defining problems (for engineering).	8.2.1
2. Developing and using models.	3.1.3, 3.1.4
3. Planning and carrying out investigations.	10.3.2
4. Analyzing and interpreting data.	5.2.5, 10.2.5
5. Using mathematics and computational thinking.	1.3.2, 4.1.1, 5.2.5
6. Constructing explanations (for science) and designing solutions (for engineering).	6.2.11, 13.1.1
7. Engaging in argument from evidence.	5.3.6, 13.1.2, 13.2.2
8. Obtaining, evaluating, and communicating information.	2.1.7

CROSSWALKS OF RESPIRATORY SCIENCE STANDARDS AND THE COMMON CAREER TECHNICAL CORE

Health Science Career Cluster™ (HL)		Performance Indicators
1.	Determine academic subject matter, in addition to high school graduation requirements, necessary for pursuing a health science career.	1.2.1, 4.1.1, 7.1.1, 8.1.1
2.	Explain the healthcare worker's role within their department, their organization, and the overall healthcare system.	1.2.1, 1.2.2, 1.2.3, 5.2.4
3.	Identify existing and potential hazards to clients, coworkers, visitors, and self in the healthcare workplace.	5.1.1, 5.1.3, 5.2.1
4.	Evaluate the roles and responsibilities of individual members as part of the healthcare team and explain their role in promoting the delivery of quality healthcare.	1.2.1, 1.2.3, 8.1.2, 8.2.1
5.	Analyze the legal and ethical responsibilities, limitations and implications of actions within the healthcare workplace.	5.1.1, 5.1.2, 5.4.1, 7.1.2
6.	Evaluate accepted ethical practices with respect to cultural, social and ethnic differences within the healthcare workplace.	2.1.3, 2.1.4, 5.1.2

Therapeutic Services Career Pathway (HL-THR)		Performance Indicators
1.	Utilize communication strategies to answer patient/client questions and concerns on planned procedures and goals.	4.1.6-4.1.7, 4.1.10 4.2.1, 4.2.3
2.	Communicate patient/client information among healthcare team members to facilitate a team approach to patient care.	4.1.6-4.1.7, 4.1.10 4.2.1, 4.2.3-4.2.4 7.1.1, 7.1.3, 7.2.4, 7.2.6
3.	Utilize processes for assessing, monitoring and reporting patient's/clients' health status to the treatment team within protocol and scope of practice.	3.1.14, 3.3.6 9.2.4
4.	Evaluate patient/client needs, strengths and problems in order to determine if treatment goals are being met.	9.1.2, 9.2.1, 9.2.3, 9.2.6-9.2.7