Biomedical
Supplemental Program Resources

This document was prepared by:

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Supplemental Program Resources 2023

Introduction

This document provides supplemental information for the Biomedical program of study. It may be updated or revised as the base program of study, or complementary programs, are updated, added, or removed. Please contact the appropriate Education Programs Professional with any questions.

The Program of Study includes the approved courses, complementary courses, alignment(s) to industry, postsecondary options, and additional information.

The Equipment List for the Biomedical program of study is included and, if applicable, additional items used only in the complementary course(s) are noted.

The Crosswalks and Alignments connect and support the Biomedical standards for the Health Science program of study. Complementary course standards are not listed in the crosswalks and alignments.

Program of Study Information

The following program of study information sheet as well as the program structure tables for the courses are provided to be able to print separately for handouts. The information provided is based on the best available information at the time of this document and will be updated as appropriate.

Biomedical

The Biomedical program provides students with the knowledge and skills in inquiry science, disease exploration, human body systems, and biomedical engineering. Areas of study include infectious and genetic diseases, molecular biology, oncology, metabolism, homeostasis, and exercise physiology.

Health Science Career Cluster

This career cluster is focused on planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

Postsecondary Options

Secondary

- Certificate of Skills Attainment

Certificate/License

- Public Infection Control (WNC)

Associate's Degree

- Applied Science (WNC)
- Medical Laboratory Technician (CSN)

Bachelor's Degree

- Biological Science (UNLV, UNR, TMCC, CSN, WNC)
- Public Health (UNLV, UNR, WNC)
- Microbiology & Immunology (UNR)

Master's/Doctoral Degree

- Biological Science (UNLV, UNR)
- Biomedical Engineering (UNR)
- Public Health (UNLV, UNR)

NEVADA Department of Education

Learning that works for America CTE

For additional information on this cluster, please contact:
Jennifer Fisk at jennifer.fisk@doe.nv.gov

Website: https://doe.nv.gov/cte/

Approved Courses

Biomedical I
Biomedical II
Biomedical III

Complementary Courses

Biomedical Advanced Studies
CTE Work Experience – Health Science

Work-Based Learning Opportunities

Job Shadowing / Internship / Work Experience / Career Days / Career Fairs / Field Trips / Guest Speakers

Career and Technical Student Organization

HOSA: Future Health Professionals

hosa future health professionals NEVADA

State Recognized Industry Certifications

Refer to the Governor's Office of Workforce Innovation's Nevada Industry Recognized Credential List

Aligned to Industry			
Occupation	Median Wage Per year	Annual Openings	% Growth
Biochemist	$102,207	3,200	15.0%
Biomedical Engineer	$97,410	1,400	10.0%
Biostatistician	$96,280	5,200	33.0%
Physician/ Surgeon	$208,000	22,700	3.0%
Laboratory Technician	$57,800	25,900	11.0%

Source U.S. Bureau of Labor Statistics 2022

Program Structure for Biomedical

The core course sequencing is provided in the following table. Complementary Courses are available and provided later in this document. The following courses provide a completed program of study.

Core Course Sequence (R) with Lab Course(s) (C)

Required/ Complementary	Course Title	Abbreviated Name	CIP Code	SCED Subject Area	SCED Course Identifier	SCED Course Level	SCED Unit Credit	SCED Course Sequence	SCED Course Number
R	Biomedical I	BIOMED I	26.0102	14	255	G	1.00	13	14255G1.0013
R	Biomedical II	BIOMED II	26.0102	14	255	G	1.00	23	14255G1.0023
R	Biomedical III	BIOMED III	26.0102	14	255	G	1.00	33	14255G1.0033

The complementary courses are provided in the following table. **The qualifying program of study must be completed prior to enrolling in the complementary course(s)**. A program does not have to utilize the complementary courses for students to complete their program of study.

Required/ Complementary	Course Title	Abbreviated Name	CIP Code	SCED Subject Area	SCED Course Identifier	SCED Course Level	SCED Unit Credit	SCED Course Sequence	SCED Course Number
C	Biomedical Advanced Studies	BIOMED AS	26.0102	14	255	E	1.00	11	14255E1.0011
C	CTE Work Experience - Health Science	WORK EXPER HEALTH	99.0008	14	298	G	1.00	11	14298G1.0011

CIP Code – Classification of Instructional Programs (CIP) Codes

SCED – School Courses for the Exchange of Data that populates the State Infinite Campus System and the System for Accountability Information in Nevada (SAIN)

Course Descriptions

Biomedical I

Prerequisite: None

This course introduces students to advanced science courses related to medical fields. Areas of exploration will include infectious, genetic, and lifestyle diseases that are dealt with in the biomedical professions. Topics include medical terminology, nutrition, mitosis, and microbiology. Practices incorporate an appreciation of alternative and culturally diverse healthcare contributions by different societies. The appropriate use of technology and industry-standard equipment is an integral part of this course.

Biomedical II

Prerequisite: Biomedical I

This course is a continuation of Biomedical I. This course allows intermediate biomedical students to develop their knowledge and skills learned in Biomedical I. Areas of study will include body systems, metabolism, exercise physiology, immunology, and homeostasis. The students will be introduced to the interactions of the human body and design experiments to investigate the structure and function. Topics include histology, sensory response, physiology, ATP, and wellness. The appropriate use of technology and industry-standard equipment is an integral part of this course.

Biomedical III

Prerequisite: Biomedical II

This course is a continuation of Biomedical II. This course provides advanced biomedical students with instruction in advanced techniques and processes. The students will be introduced to pathogen defense, molecular biology, oncology, and biomedical engineering. Topics include community health, genetics, cancer, and biotechnology. The appropriate use of technology and industry-standard equipment is an integral part of this course. Upon successful completion of this course, students will have acquired entry-level skills for employment and be prepared for postsecondary education.

Biomedical Advanced Studies

Prerequisite: Completion of Biomedical Program of Study

This course is offered to students who have completed all content standards in a program and desire to pursue advanced study through investigation and in-depth research. Students are expected to work independently or in a team and consult with their supervising teacher for guidance. The supervising teacher will give directions, monitor, and evaluate the students' topic of study. Coursework may include various work-based learning experiences such as internships and job shadowing, involvement in a school-based enterprise, completion of a capstone project, and/or portfolio development. This course may be repeated for additional instruction and credit.

CTE Work Experience – Health Science

Prerequisite: Completion of Level 2 course in the qualifying program of study

This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth CTE work experience that applies the processes, concepts, and principles as described in the classroom instruction. This course will encourage students to explore and develop advanced skills through work-based learning directly related to the program of study. The course must follow NAC 389.562, 389.564, 389.566 regulations.

Supplemental Program Resources 2023

Equipment List

This recommended list is based upon a classroom size of 25 students. All costs are estimated and may be adjusted once verified and justified by districts with current quotes. No specific equipment vendor or brand names are endorsed due to various possibilities, but school districts should consult with stakeholders to ensure industry-recognized equipment and software are purchased. The intent of this list is to provide school districts with guidance on the equipment needed to implement the state standards for a Biomedical program.

CTE Classroom Equipment **Total: $1,360**

QTY	ITEM DESCRIPTION	UNIT	TOTAL
2	Storage Cabinets (36” x 12” x 72”) (lockable)	$300	$600
1	Eyewash Station	$300	$300
2	Fire Extinguisher	$130	$260
1	Sink with Soap Dispenser	$100	$100
1	First Aid Kit	$100	$100

Program Equipment **Total: $35,050**

QTY	ITEM DESCRIPTION	UNIT	TOTAL
25	Student Computers	$1,000	$25,000
1	Technology Storage/Charging System	$2,000	$2,000
1	Chemical Fume Hood	$2,000	$2,000
1	Autoclave	$1,000	$1,000
1	Thermal Cycler	$2,000	$2,000
1	Water Bath	$500	$500
1	Acid Cabinet	$800	$800
1	Micro Centrifuge	$600	$600
1	Incubator	$550	$550
Varies	Organ Models	$600	$600

Instructional Materials **Total: $3,000**

QTY	ITEM DESCRIPTION	UNIT	TOTAL
25	Student Textbooks (Approved by NDE) CTE Instructional Materials list can be found here.	$100	$2,500
1	Teacher Textbook Edition and Resources	$500	$500

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Instructional Supplies

Total: $13,425

QTY	ITEM DESCRIPTION	UNIT	TOTAL
10	Microscopes	$250	$2,500
10	Digital Scales	$250	$2,500
5	Electrophoresis Kits	$250	$1,250
1	Refrigerator	$200	$200
1	White Light Illuminator	$150	$150
25	Dissecting Kits and Trays	$50	$1,250
5	Hot Plates	$50	$250
1	Biohazard Waste Can	$50	$50
1	Biohazard Sharps Container	$25	$25
10	Mortar and Pestle Sets	$25	$250
25	Thermometers	$20	$500
Varies	Diagnostic Tools (tuning forks, blood pressure kits, pulse oximeters, etc.)	$1,000	$1,000
Varies	Preserved Dissection Specimens	$500	$500
Varies	Pipettes	$1,000	$1,000
Varies	Glassware	$500	$500
Varies	Personal Protective Equipment (PPE) (gloves, safety glasses, aprons, etc.)	$500	$500
Varies	Micro Centrifuge Supplies, Petri Dishes, Bottles, Racks	$250	$250
Varies	Specialty Reagents	$250	$250
Varies	Gel Loading Dye, pH Paper	$200	$200
Varies	Prepared Slides	$200	$200
Varies	Inoculating Loops	$100	$100

Other

Total: $300

QTY	ITEM DESCRIPTION	UNIT	TOTAL
1	Occupational Safety and Health Administration (OSHA) Instructor Training	$300	$300

Category Totals:

Classroom Equipment	$1,360
Program Equipment	$35,050
Instructional Materials	$3,000
Instructional Supplies	$13,425
Other	$300
Estimated Program Total	**$53,135**

Crosswalks and Alignments for Program of Study Standards

Crosswalks and alignments are intended to assist the teacher make connections for students between the technical skills within the program and academic standards. The crosswalks and alignments are not intended to teach the academic standards but to assist students in making meaningful connections between their CTE program of study and academic courses. The crosswalks are for the required program of study courses, not the complementary courses.

Crosswalks (Academic Standards)

The crosswalks of the Biomedical Standards show connections with the Nevada Academic Content Standards. The crosswalk identifies the performance indicators in which the learning objectives in the Biomedical program connect with and support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the Nevada Academic Content Standards in English Language Arts, Mathematics, and Science.

Alignments (Mathematical Practices)

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

Alignments (Science and Engineering Practices)

In addition to connections 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 Biomedical Standards Performance Indicators and the Science and Engineering Practices. This alignment identifies the performance indicators in which the learning objectives in the Biomedical program connect with and support academic learning.

Crosswalks (Common Career Technical Core)

The crosswalks of the Biomedical Standards show connections with the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Biomedical program connect with and 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 Biomedical Standards are crosswalked to the Health Science Career Cluster™ and the Research and Development Career Pathway.

Crosswalk of Biomedical Program of Study Standards and the Nevada Academic Content Standards

English Language Arts: Language Standards

Nevada Academic Content Standards		Performance Indicators
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.	1.5.2

English Language Arts: Reading Standards for Informational Text

Nevada Academic Content Standards		Performance Indicators
RI.11-12.7	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	3.2.4
RI.11-12.8	Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses).	3.1.2

English Language Arts: Reading Standards for Literacy in Science and Technical Subjects

Nevada Academic Content Standards		Performance Indicators
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.	3.1.1, 3.3.1; 5.4.8, 5.5.2 5.5.3
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.	3.2.4, 3.3.1; 5.4.8, 5.5.2 5.5.3; 8.2.1
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.	2.1.3, 2.1.4, 2.1.10; 3.1.1 4.5.2; 8.4.1

English Language Arts: Speaking and Listening Standards

Nevada Academic Content Standards		Performance Indicators
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.	1.1.1, 1.1.2, 1.2.1, 1.2.4 1.4.2, 1.5.2
SL.11-12.1c	Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.	3.3.1
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.	1.1.1, 1.1.2, 1.2.1, 1.2.4 1.4.2; 3.3.1; 6.2.2
SL.11-12.3	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.	3.3.1
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.	1.1.1, 1.1.2, 1.2.1, 1.2.4 1.4.2, 1.5.2; 6.2.2, 6.2.8 7.2.2, 7.4.1, 7.4.4, 7.4.8 7.4.9; 8.4.3, 8.5.2, 8.6.5 9.4.2, 9.4.4; 10.1.6, 10.2.1 10.3.1, 10.3.2; 11.1.3
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.)	9.4.4

English Language Arts: Writing Standards for Literacy in Science and Technical Subjects

Nevada Academic Content Standards		Performance Indicators
WHST.11-12.1	Write arguments focused on discipline-specific content.	2.1.6
WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.	3.3.2; 5.4.5, 5.5.3; 6.1.1 6.2.7; 7.1.3, 7.2.2, 7.4.9 8.2.2, 8.4.7, 8.5.4; 9.1.2 9.2.6; 10.1.1, 10.2.1 10.4.1
WHST.11-12.2a	Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	8.5.4
WHST.11-12.2d	Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.	9.4.4
WHST.11-12.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	1.2.5, 1.4.1; 3.3.2; 5.3.4 5.4.5, 5.4.8, 5.5.2; 7.2.2 8.4.7, 8.5.4; 9.1.2, 9.4.4
WHST.11-12.5	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.	1.4.4
WHST.11-12.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	1.4.5
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.	2.1.2, 2.1.3, 2.1.4, 2.2.5 3.1.1, 3.1.2, 3.2.1; 4.5.2 7.4.1, 7.4.4; 8.6.6; 9.3.2 10.1.6, 10.4.1
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.	1.1.2, 1.1.3, 1.4.2, 1.4.3 1.5.2; 2.1.2, 2.1.3, 2.1.4 3.2.4
WHST.11-12.9	Draw evidence from informational texts to support analysis, reflection, and research.	2.1.15

Math: Algebra – Seeing Structure in Expressions

Nevada Academic Content Standards		Performance Indicators
ASSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.	3.1.2

Math: Statistics and Probability- Using Probability to Make Decisions

Nevada Academic Content Standards		Performance Indicators
SMD.B.7(+)	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	3.2.1

Science: Structure and Function (LS1)

Nevada Academic Content Standards		Performance Indicators
HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.	2.1.7, 2.1.8; 4.2.1; 5.3.2; 6.1.1 6.1.2 6.1.3, 6.1.4, 6.1.5; 8.3.1 8.3.2, 8.3.3 11.4.1, 14.2.1; 15.1.1 5.2.1, 15.2.3 16.1.4; 17.1.3, 17.1.4 17.1.5, 17.1.6
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.3.1 5.3.3; 8.1.1, 8.1.2, 8.1.3, 8.2.1 8.2.2 9.1.1, 9.1.2, 9.1.3, 9.2.1 9.2.2, 9.2.3 9.2.4, 9.2.5, 9.2.6 9.3.1; 10.1.1 10.1.2, 10.2.1, 10.3.1 10.4.1, 10.4.2 10.4.3; 11.1.1 11.1.2, 11.1.3, 11.1.4 11.1.5 11.1.6, 11.1.7, 11.2.1, 11.2.2 11.3.1, 11.3.2, 11.3.3; 12.1.1 12.1.2 12.2.2, 12.2.3; 13.1.1 13.1.2; 14.2.3 14.2.4, 14.2.6 15.2.2; 16.1.2; 17.1.1 17.1.2
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	3.1.3; 5.3.4, 5.3.5, 5.3.6; 9.3.2 9.3.3 10.3.3, 10.4.4; 11.3.4; 12.1.3 13.1.3 13.1.4; 14.1.2, 14.1.3 14.1.5; 15.2.5 17.2.2
HS-LS1-6	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.	3.2.1, 3.2.2, 3.2.3; 4.2.2; 10.2.2 11.4.2; 16.2.2

Science: Structure and Function (LS1)

Nevada Academic Content Standards		Performance Indicators
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.	10.2.4, 10.2.5, 10.2.6; 11.4.3
HS-LS2-3	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	10.3.2; 11.2.3

Science: Inheritance and Variation of Traits (LS1 and LS3)

Nevada Academic Content Standards		Performance Indicators
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	17.2.2
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.	3.1.1; 4.1.1, 4.1.2, 4.1.3, 4.1.4 4.2.3 4.2.4, 4.2.6, 4.2.8; 10.2.3 14.1.1 15.1.2, 15.1.33, 15.1.5 16.1.1
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.	4.2.7; 14.1.7; 17.2.3

Science: Natural Selection and Evolution (LS4)

Nevada Academic Content Standards		Performance Indicators
HS-LS4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	3.1.5
HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	3.2.4

Science: Waves and Electromagnetic Radiation (PS4)

Nevada Academic Content Standards		Performance Indicators
HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.	16.1.3

Alignment of Biomedical Standards and the Mathematical Practices

Mathematical Practices	Biomedical Performance Indicators
1. Make sense of problems and persevere in solving them.	2.1.6 3.1.2 14.1.5
2. Reason abstractly and quantitatively.	2.1.4 14.1.5
3. Construct viable arguments and critique the reasoning of others.	15.2.5, 15.2.6
4. Model with mathematics.	14.1.5
5. Use appropriate tools strategically.	5.3.6 6.1.5 8.3.3 17.2.4
6. Attend to precision.	8.3.3 16.2.2
7. Look for and make use of structure.	5.2.1, 5.2.4 9.1.1, 9.2.1 10.2.2, 10.3.1, 10.4.1, 10.4.2 11.1.1, 11.2.1, 11.3.1 12.1.1, 12.2.1
8. Look for and express regularity in repeated reasoning.	16.2.1

Alignment of Biomedical Standards and the Science and Engineering Practices

Science and Engineering Practices	Biomedical Performance Indicators
1. Asking questions (for science) and defining problems (for engineering).	3.1.1 5.1.1
2. Developing and using models.	4.2.1-4.2.7 5.1.3, 5.2.1, 5.2.4, 5.3.1-5.3.3
3. Planning and carrying out investigations.	5.1.1 9.3.3 16.1.5 17.2.2
4. Analyzing and interpreting data.	2.1.1-2.1.6 3.1.2, 3.2.1 4.2.4, 4.2.8 15.1.5
5. Using mathematics and computational thinking.	2.1.4 3.1.2 14.1.5
6. Constructing explanations (for science) and designing solutions (for engineering).	2.1.3 4.2.8 5.1.2 8.3.3 9.1.3
7. Engaging in argument from evidence.	2.1.1 5.3.5 15.2.5, 15.2.6
8. Obtaining, evaluating, and communicating information.	3.2.4 4.1.4, 4.2.7 5.3.5 6.1.3 8.1.3, 8.3.2 14.1.3, 14.2.1 16.2.2

Crosswalks of Biomedical Standards and the Common Career Technical Core

Health Science Career Cluster	Performance Indicators
1. Determine academic subject matter, in addition to high school graduation requirements, necessary for pursuing a health science career.	7.1.1-7.1.3; 8.1.1-8.1.2 9.1.1-9.1.13; 10.1.1, 10.2.1 10.4.1
2. Explain the healthcare worker's role within their department, their organization, and the overall healthcare system	3.1.4; 6.1.1, 6.1.4; 7.1.4 8.1.4; 11.1.7
3. Identify existing and potential hazards to clients, coworkers, visitors, and self in the healthcare workplace	5.1.1, 5.3.4-5.3.4; 6.1.1
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 health care	3.1.4; 14.1.1, 14.1.8
5. Analyze the legal and ethical responsibilities, limitations, and implications of actions within the healthcare workplace.	2.1.2; 5.1.2
6. Evaluate accepted ethical practices with respect to cultural, social, and ethnic difference within the healthcare workplace.	2.1.2; 5.1.2; 7.1.4

Biotechnology Research and Development Career Pathway	Performance Indicators
1. Summarize the goals of biotechnology research and development within legal and ethical protocols.	6.1.5; 7.1.4; 8.3.4; 15.2.5 17.1.4; 17.2.1
2. Appy the fundamentals of biochemistry, cell biology, genetics, mathematical concepts, microbiology, molecular biology, organic chemistry, and statistics to conduct effective biotechnology research and development of products.	2.1.8; 4.1.3; 6.1.5; 8.1.4 8.3.2. 8.3.4
3. Demonstrate basic knowledge of recombinant DNA, genetic engineering, bioprocessing, monoclonal antibody production, nanotechnology, bioinformatics, genomics, proteomics, and transcriptomics to conduct biotechnology research and development.	2.1.8, 2.1.3; 8.3.2-8.3.4 11.2.3
4. Demonstrate the principles of solution preparation, sterile techniques, contamination control, and measurement and calibration of instruments used in biotechnology research.	5.3.6; 6.1.4; 14.2.5; 15.1.5
5. Determine processes for product design and production and hot that work contributes to an understanding of the biotechnology product development process.	5.3.6; 8.3.4; 16.2.2
6. Summarize and explain the larger ethical, moral, and legal issues related to biotechnology research, product development and use in society.	2.1.8; 7.1.4; 15.1.4 15.2.5-15.2.6