

**Standards and competencies used in this framework are from:** Biotechnology/Biomedical Skill Standards Project, Shoreline Community College

Performance Tasks/Assessments	Standards and Competencies (Exploratory = pre-industry content standard. Preparatory = industry standard)	Essential Academic Learning Requirements Benchmark 3 Washington State Goals 1 and 2	Analytical, Logical, Creative Thinking WA State Goal 3	Leadership Skills and Activity	Employability Skills	Local District Goals	Estimated Hours	Relevance to Work. Goal 4
<p><b>Performance Task:</b> Students will investigate their personality and match it to career interests. Students will then correlate this personal information with biotech companies and specific job possibilities using a Power Point Presentation. Students will research, organize, and evaluate information from Internet sources. The performance assessment will be a combination research, written, and oral project.</p> <p>Students will investigate by doing a survey of one of the 160 Seattle area biotech companies and describe the history, research, and technologies of the company. Students will identify and describe the genetic disorders of interest for a biotech company and relate to the Central Dogma of Biology. Students will present their information by creating an information brochure, using Publisher that will be organized into a class biotech wall map.</p>	<p><b>A. Bioethics in the Biotechnology Workplace</b> A1: Students will work ethically in all academic, lab, and career situations</p> <p><b>B. Career Exploration in Biotechnology</b> B1. Students will be able to access information about careers in biotechnology and locate and respond to appropriate job listings</p> <p><b>C. Communication in Biotechnology</b> C6. Students will be able to access and utilize information in databases to support their investigational research.</p>	<p><b>Science 1.2 Structures: Understand how components, structures, organizations, and interconnections describe systems.</b></p> <p>1.2.7 Understand how genetic information (DNA) in the cell is encoded at the molecular level and provides genetic continuity between generations.</p> <p><b>Science 2.2 Nature of Science: Understand the nature of scientific inquiry.</b></p> <p>2.2.1 Analyze and explain why curiosity, honesty, openness, and skepticism are integral to scientific inquiry.</p> <p>2.2.3 Evaluate divergent results from scientific investigations based on scientific arguments and explanations.</p> <p>2.2.5 Understand how science involves testing, revising, and occasionally discarding theories, how inquiry and investigations lead to better understanding of the natural world, and why inquiry cannot lead to absolute truth.</p> <p><b>Science 3.1 Designing Solutions: Apply design processes to develop solutions to human problems or meet challenges using the knowledge and skills of science and technology.</b></p> <p>3.1.1 Analyze challenges or problems from local, regional, national, or global contexts in which scientific design can be or has been used to design a solution.</p> <p><b>Science 3.2 Science, Technology, and Society: Understand that science and technology are human endeavors, interrelated to each other, to society, and to the workplace.</b></p> <p>3.2.1 Analyze how scientific knowledge and technological advances discovered and developed by individuals and communities in all cultures of the world contribute to changes in societies.</p> <p>3.2.2 Analyze how the scientific enterprise and technological advances influence and are influenced by human activity.</p> <p>3.2.3 Analyze the scientific, mathematical, and technological knowledge, training, and experience needed for occupational/career areas of interest.</p> <p>3.2.4 Analyze the effects of natural events and human activities on the Earth's capacity to sustain biological diversity.</p>	<p>Knowledge Comprehension Application Analysis Synthesis</p>	<p><b>Leadership 1.0 Individual Skills</b></p> <p>1.3. The student demonstrates oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills.</p> <p>1.5 The student is involved in activities that require applying theory, problem-solving, and critical and creative thinking skills while understanding outcomes of related decisions.</p> <p>1.6 The student demonstrates self-advocacy skills by achieving planned, individual goals.</p> <p><b>Leadership 2.0 Group Skills</b></p> <p>2.1 The student communicates, participates, and advocates effectively in pairs, small groups, teams, and large groups in order to reach common goals.</p> <p><b>Leadership 3.0 Community and Career Skills</b></p> <p>3.6 The student understands the importance of and utilizes the components and structure of community-based organizations.</p> <p>Leadership Activity: Students demonstrate and develop individual leadership and initiative through planning, monitoring, completing, and presenting a detailed, long-term project.</p>	<p><b>SCANS 2.0 The student demonstrates interpersonal skills in working well with others.</b></p> <p>2.1: Participates as a member of a team</p> <p><b>SCANS 3.0 The student acquires and uses information</b></p> <p>3.1: Acquires and evaluates information</p> <p>3.2: Organizes and maintains information</p> <p>3.3: Interprets and communicates information</p> <p>3.4: Uses computers to process information</p> <p><b>SCANS 4.0 The student understands complex systems and inter-relationships</b></p> <p>4.1: Understands Systems - Knows how social, organizational, and technological systems work and operates effectively with them.</p>	<p>Use Information Resourcefully Communicate Effectively</p>	20	<p>Understanding career options and the nature of the Biotechnology Industry is essential for those considering entrance into the biotechnology field.</p>

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<p><b>Performance Task:</b> Students will learn and practice micropipetting, making buffers, loading agarose gels, isolating DNA, digesting DNA, and separating and analyzing DNA gel patterns. Basic performance assessments will be conducted individually on each procedure utilized in DNA gel electrophoresis.</p> <p>The final assessment will be both a written and lab exercise. The lab portion of the assessment will have students using all of these skills: digest DNA, run an agarose gel, and identify an unknown by plasmid mapping. The written portion of the assessment will be a formal lab write up to summarize their methods and findings.</p>	<p><b>D. Experimental Setup, Implementation, Troubleshooting, Monitoring, and Analysis in Biotechnology.</b> D1. Students will apply the scientific method appropriately to design experiments that accurately test a hypothesis. D3. Students will collect and record data carefully and consistently, using appropriate documentation.</p> <p><b>E. Exploratory Skills in Biotechnology</b> E1. Identify a problem during an experimental procedure and the cause of the problem E2. Know where to find and research accurate protocols, procedures, and background information E6. Estimate or predict a result and compare to actual data</p> <p><b>F. Exploratory Skills in Biotechnology</b> F1. Read protocols, test procedures, or standard operating procedures. F2. Identify controls, standards, independent variables, and dependent variables in various procedures. F3. Properly prepare all samples and reagents for testing F4. Be familiar with equipment and be able to determine if equipment is functioning properly. F5. Be able to perform the required test or assay F6. Use appropriate controls and standards F7. Return, archive, or dispose appropriately of all samples and reagents involved</p>	<p><b>Science 1.1 Properties: Understand how properties are used to identify, describe, and categorize substances, materials, and objects and how characteristics are used to categorize living things.</b> 1.1.1 Understand the atomic nature of matter, how it relates to physical and chemical properties, and serves as the basis for the structure and use of the Periodic Table. 1.1.4 Analyze the forms of energy in a system, subsystems, or parts of a system.</p> <p><b>Science 1.2 Structures: Understand how components, structures, organizations, and interconnections describe systems.</b> 1.2.1 Analyze systems, including the inputs, outputs, and interconnections of a system and its subsystems. 1.2.3 Analyze the relationship between the structural characteristics of atoms and how atoms bond to form molecules. 1.2.6 Understand the structures within cells and how specific genes regulate the functions performed by these structures. 1.2.7 Understand how genetic information (DNA) in the cell is encoded at the molecular level and provides genetic continuity between generations.</p> <p><b>Science 1.3 Changes: Understand how interactions within and among systems cause changes in matter and energy.</b> 1.3.9 Analyze the scientific evidence used to develop the theory of biological evolution and the concepts of speciation, adaptation, and biological diversity.</p> <p><b>Science 3.2 Science, Technology, and Society: Understand that science and technology are human endeavors, interrelated to each other, to society, and to the workplace.</b> 3.2.1 Analyze how scientific knowledge and technological advances discovered and developed by individuals and communities in all cultures of the world contribute to changes in societies.</p>	<p>Knowledge Application Analysis Synthesis</p>	<p><b>Leadership 1.0 Individual Skills</b> 1.3. The student demonstrates oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills. 1.5 The student is involved in activities that require applying theory, problem-solving, and critical and creative thinking skills while understanding outcomes of related decisions.</p> <p><b>Leadership 2.0 Group Skills</b> 2.1 The student communicates, participates, and advocates effectively in pairs, small groups, teams, and large groups in order to reach common goals.</p> <p>Leadership Activity: Students demonstrate and develop group leadership skills by working together in a simulated Biotech lab team where they conduct research and real-world experiments.</p>	<p><b>SCANS 2.0 The student demonstrates interpersonal skills in working well with others.</b> 2.1: Participates as a member of a team</p> <p><b>SCANS 3.0 The student acquires and uses information</b> 3.1: Acquires and evaluates information 3.2: Organizes and maintains information 3.3: Interprets and communicates information 3.4: Uses computers to process information</p> <p><b>SCANS 5.0 The student works with a variety of technologies</b> 5.1: Selects Technology - Chooses procedures, tools or equipment including computers and related technologies. 5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment. 5.3: Maintains and Troubleshoots Equipment - Prevents, identifies, or solves problems with equipment, including computers and other technologies.</p>	<p>Use Information Resourcefully Communicate Effectively</p>	<p>40</p>	<p>Electrophoresis techniques, DNA analysis lab skills, and writing lab reports are essential skills used by those in the biotechnology field.</p>

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<p><b>Performance Task:</b> Students will explore the genetic basis of nicotine addiction, review DNA structure and synthesis, use electrophoresis to analyze DNA sequence accomplished by cycle sequencing, identify single nucleotide polymorphisms, and use NCBI blast to data base and analyze their data. Students will be assessed on each of these steps.</p> <p>The final performance assessment will involve the lab work in sequencing their human DNA template, running the gel, developing the Southern Blot, visualizing the DNA on the blots, correctly reading and recording the DNA sequence, and entering the data on a class data base for analysis. The written portion of the assessment will require students to complete a technical lab report. The students will also be required to present their data/findings to the class using computer technology, the database, and NCBI Blast.</p>	<p><b>D. Experimental Setup, Implementation, Troubleshooting, Monitoring, and Analysis in Biotechnology.</b> D2. Students will carry out a protocol demonstrating careful attention to detail, and will recognize and address problems in equipment and supplies</p> <p><b>E. Exploratory Skills in Biotechnology</b> E2. Know where to find and research accurate protocols, procedures, and background information E9. Identify patterns and extrapolate meaning.</p> <p><b>G. Material Handling and Safety in Biotechnology</b> G1. Students are knowledgeable of chemical hazards in the lab and follow rules for the safe use and disposal of chemicals. G4. Students use laboratory equipment safely.</p>	<p><b>Science 1.1 Properties: Understand how properties are used to identify, describe, and categorize substances, materials, and objects and how characteristics are used to categorize living things.</b></p> <p>1.1.6 Analyze structural, cellular, biochemical, and genetic relationships among organisms.</p> <p><b>Science 2.1 Investigating Systems: Develop the knowledge and skills necessary to do scientific inquiry.</b></p> <p>2.1.2 Understand how to design and conduct systematic and complex scientific investigations. 2.1.5 Understand how to research, interpret and defend scientific investigations, conclusions, or arguments.</p>	<p>Knowledge Application Analysis</p>	<p><b>Leadership 2.0 Group Skills</b> 2.1 The student communicates, participates, and advocates effectively in pairs, small groups, teams, and large groups in order to reach common goals.</p> <p>Leadership Activity: Students demonstrate and develop group leadership skills by working together in a simulated Biotech lab team where they conduct research and real-world experiments.</p>	<p><b>SCANS 1.0 The student identifies, organizes, plans and allocates resources</b> 1.3: Materials and facilities - Acquires, stores, allocates, and uses materials or space efficiently.</p> <p><b>SCANS 2.0 The student demonstrates interpersonal skills in working well with others.</b> 2.1: Participates as a member of a team</p> <p><b>SCANS 3.0 The student acquires and uses information</b> 3.1: Acquires and evaluates information 3.2: Organizes and maintains information 3.3: Interprets and communicates information 3.4: Uses computers to process information</p> <p><b>SCANS 5.0 The student works with a variety of technologies</b> 5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.</p>	<p>Use Information Resourcefully Manage Personally and Socially Think Strategically</p>	<p>30</p>	<p>The ability to analyze DNA sequences and conduct lab research are essential skills used by those in the biotechnology field.</p>

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<p><b>Performance Task:</b> Students will research and gain knowledge in a wide range of applications that use biotechnology such as Microbiology, Biochemistry, Drug discovery, Genetic disease mapping, and Forensics. Each student will investigate one Seattle area biotechnology company, one genetic disease researched by that company, research drug discovery related to that disease, relate it to concepts and methods used in the biotech class, and find jobs and investigate necessary education and skills for that occupation. The student will complete an electronic portfolio of this investigation; organize the portfolio for a concise and in-depth presentation to the class.</p>	<p><b>A. Bioethics in the Biotechnology Workplace</b> A1: Students will work ethically in all academic, lab, and career situations</p> <p><b>B. Career Exploration in Biotechnology</b> B1. Students will be able to access information about careers in biotechnology and locate and respond to appropriate job listings</p> <p><b>E. Exploratory Skills in Biotechnology</b> E1. Identify a problem during an experimental procedure and the cause of the problem E2. Know where to find and research accurate protocols, procedures, and background information E4. Calculate and minimize errors E7. Make accurate observations and note when events are discrepant</p> <p><b>G. Material Handling and Safety in Biotechnology</b> G2. Students use proper precautions and disposal methods when working with microorganisms. G3. Students use protective equipment, can operate emergency equipment, and can identify conditions presenting a threat to health and safety.</p> <p><b>H. Application of Mathematical Skills to Laboratory Situations in Biotechnology</b> H1. Students will accurately perform and report measurements of volume, length, temperature, and mass.</p>	<p><b>Science 1.3 Changes: Understand how interactions within and among systems cause changes in matter and energy.</b> 1.3.9 Analyze the scientific evidence used to develop the theory of biological evolution and the concepts of speciation, adaptation, and biological diversity. 1.3.10 Analyze the biotic and abiotic factors that affect living organisms in ecosystems.</p> <p><b>Science 2.1 Investigating Systems: Develop the knowledge and skills necessary to do scientific inquiry.</b> 2.1.2 Understand how to design and conduct systematic and complex scientific investigations. 2.1.3 Evaluate evidence to formulate, revise, and analyze scientific explanations. 2.1.5 Understand how to research, interpret and defend scientific investigations, conclusions, or arguments.</p> <p><b>Science 2.2 Nature of Science: Understand the nature of scientific inquiry.</b> 2.2.2 Evaluate factors that limit the extent of a scientific investigation or design process. 2.2.3 Evaluate divergent results from scientific investigations based on scientific arguments and explanations. 2.2.4 Analyze and evaluate the quality and standards of investigative designs, processes, and procedures.</p> <p><b>Science 3.1 Designing Solutions: Apply design processes to develop solutions to human problems or meet challenges using the knowledge and skills of science and technology.</b> 3.1.1 Analyze challenges or problems from local, regional, national, or global contexts in which scientific design can be or has been used to design a solution.</p>	<p>Knowledge Application Analysis</p>	<p><b>Leadership 1.0 Individual Skills</b> 1.1. The student analyzes, refines, and applies decision-making skills through classroom, community, family and work-related experiences. 1.4 The student applies leadership skills in real-world, family, community, business and industry applications. 1.5 The student is involved in activities that require applying theory, problem-solving, and critical and creative thinking skills while understanding outcomes of related decisions.</p> <p><b>Leadership 3.0 Community and Career Skills</b> 3.2 The student demonstrates social responsibility in family, community, business and industry.</p> <p>Leadership Activity: Students demonstrate and develop individual leadership and initiative through planning, monitoring, completing, and presenting a detailed, long-term project.</p>	<p><b>SCANS 2.0 The student demonstrates interpersonal skills in working well with others.</b> 2.1: Participates as a member of a team</p> <p><b>SCANS 3.0 The student acquires and uses information</b> 3.1: Acquires and evaluates information 3.2: Organizes and maintains information 3.3: Interprets and communicates information 3.4: Uses computers to process information</p> <p><b>SCANS 4.0 The student understands complex systems and inter-relationships</b> 4.1: Understands Systems - Knows how social, organizational, and technological systems work and operates effectively with them.</p> <p><b>SCANS 5.0 The student works with a variety of technologies</b> 5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.</p>	<p>Use Information Resourcefully Communicate Effectively Think Strategically</p>	30	Understanding the wide range of applications that use biotechnology allows workers in the biotechnology to understand biotechnology from a broad systemic perspective.

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**Science 3.2 Science, Technology, and Society: Understand that science and technology are human endeavors, interrelated to each other, to society, and to the workplace.**

3.2.1 Analyze how scientific knowledge and technological advances discovered and developed by individuals and communities in all cultures of the world contribute to changes in societies.

3.2.2 Analyze how the scientific enterprise and technological advances influence and are influenced by human activity.

3.2.3 Analyze the scientific, mathematical, and technological knowledge, training, and experience needed for occupational/career areas of interest.

3.2.4 Analyze the effects of natural events and human activities on the Earth's capacity to sustain biological diversity.

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<p><b>Performance Task:</b> The lab-based performance assessment will test and extend a range of skills that they have learned in the course. Students will be given nanogram quantities of an unknown DNA plasmid and with little or no guidance will be expected to transform, grow, and purify microgram quantities of the plasmid. Then students will need to map the plasmid by restriction digest to identify the type of plasmid. At this point they will be required to express the gene product encoded on the plasmid and purify the protein by chromatography or protein gel electrophoresis. Students then will complete a detailed lab report reviewing the procedures used, data, and findings.</p>	<p><b>D. Experimental Setup, Implementation, Troubleshooting, Monitoring, and Analysis in Biotechnology.</b> D1. Students will apply the scientific method appropriately to design experiments that accurately test a hypothesis. D2. Students will carry out a protocol demonstrating careful attention to detail, and will recognize and address problems in equipment and supplies D3. Students will collect and record data carefully and consistently, using appropriate documentation. D4. Students will analyze data to produce logical results and can suggest modifications for the experimental design.</p> <p><b>E. Exploratory Skills in Biotechnology</b> E1. Identify a problem during an experimental procedure and the cause of the problem E6. Estimate or predict a result and compare to actual data E7. Make accurate observations and note when events are discrepant E9. Identify patterns and extrapolate meaning.</p>	<p><b>Science 2.1 Investigating Systems: Develop the knowledge and skills necessary to do scientific inquiry.</b> 2.1.2 Understand how to design and conduct systematic and complex scientific investigations.</p> <p><b>Science 2.2 Nature of Science: Understand the nature of scientific inquiry.</b> 2.2.5 Understand how science involves testing, revising, and occasionally discarding theories, how inquiry and investigations lead to better understanding of the natural world, and why inquiry cannot lead to absolute truth.</p> <p><b>Science 3.1 Designing Solutions: Apply design processes to develop solutions to human problems or meet challenges using the knowledge and skills of science and technology.</b> 3.1.2 Synthesize and apply scientific concepts and principles to design and test multiple solutions to a problem.</p>	<p>Knowledge Comprehension Application Analysis Synthesis</p>	<p><b>Leadership 1.0 Individual Skills</b> 1.5 The student is involved in activities that require applying theory, problem-solving, and critical and creative thinking skills while understanding outcomes of related decisions.</p> <p><b>Leadership 2.0 Group Skills</b> 2.1 The student communicates, participates, and advocates effectively in pairs, small groups, teams, and large groups in order to reach common goals.</p> <p><b>Leadership 3.0 Community and Career Skills</b> 3.7 The student participates in the development of a program of work or strategic plan and will work to implement the organization's goals.</p> <p>Leadership Activity: Students demonstrate and develop group leadership skills by working together in a simulated Biotech lab team where they conduct research and real-world experiments.</p>	<p><b>SCANS 1.0 The student identifies, organizes, plans and allocates resources</b> 1.3: Materials and facilities - Acquires, stores, allocates, and uses materials or space efficiently.</p> <p><b>SCANS 2.0 The student demonstrates interpersonal skills in working well with others.</b> 2.1: Participates as a member of a team</p> <p><b>SCANS 3.0 The student acquires and uses information</b> 3.1: Acquires and evaluates information 3.3: Interprets and communicates information</p> <p><b>SCANS 5.0 The student works with a variety of technologies</b> 5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.</p>	<p>Use Information Resourcefully Communicate Effectively Think Strategically</p>	<p>30</p>	<p>Identifying unknown plasmids, transforming plasmids, and protein purification of the gene products are essential and commonly used skills by those in the biotechnology industry.</p>

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<p><b>Performance Task:</b> Students will complete a culminating research project which will be a comprehensive test of the content and industry skills that they have learned throughout the year. This is an authentic project involving the biological and chemical study of a nearby stream. The students will filter microbes from the stream, isolate DNA, digest the DNA, clone DNA fragments into plasmids, grow clones, purify DNA, sequence DNA, use NCBI Blast to identify the organism of origin, analyze the class results, evaluate results, make conclusions, plan future studies, and publish the data on the class web site. This performance assessment will provide students an opportunity to practice and use all their skills in an authentic and long-term project. Their work will be summarized in individual lab reports and will acknowledged their contribution to the Swamp Creek investigation that is monitoring the health of a stream by identifying the microbes that are present in a healthy vs. unhealthy stream.</p>	<p><b>D. Experimental Setup, Implementation, Troubleshooting, Monitoring, and Analysis in Biotechnology.</b> D1. Students will apply the scientific method appropriately to design experiments that accurately test a hypothesis. D3. Students will collect and record data carefully and consistently, using appropriate documentation. D4. Students will analyze data to produce logical results and can suggest modifications for the experimental design.</p> <p><b>E. Exploratory Skills in Biotechnology</b> E1. Identify a problem during an experimental procedure and the cause of the problem E2. Know where to find and research accurate protocols, procedures, and background information E5. Develop and expand ideas and insights E6. Estimate or predict a result and compare to actual data E9. Identify patterns and extrapolate meaning.</p> <p><b>C. Communication in Biotechnology</b> C1. Students will use a set of industry standards to accurately document their lab experience in lab notebooks C6. Students will be able to access and utilize information in databases to support their investigational research. C7. Students will create graphs, charts, and tables to organize experimental data</p> <p><b>G. Material Handling and Safety in Biotechnology</b> G2. Students use proper precautions and disposal methods when working with microorganisms. G3. Students use protective equipment, can operate emergency equipment, and can identify conditions presenting a threat to health and safety.</p>	<p><b>Science 1.2 Structures: Understand how components, structures, organizations, and interconnections describe systems.</b> 1.2.1 Analyze systems, including the inputs, outputs, and interconnections of a system and its subsystems. 1.2.7 Understand how genetic information (DNA) in the cell is encoded at the molecular level and provides genetic continuity between generations.</p> <p><b>Science 1.3 Changes: Understand how interactions within and among systems cause changes in matter and energy.</b> 1.3.9 Analyze the scientific evidence used to develop the theory of biological evolution and the concepts of speciation, adaptation, and biological diversity. 1.3.10 Analyze the biotic and abiotic factors that affect living organisms in ecosystems.</p> <p><b>Science 2.1 Investigating Systems: Develop the knowledge and skills necessary to do scientific inquiry.</b> 2.1.2 Understand how to design and conduct systematic and complex scientific investigations. 2.1.5 Understand how to research, interpret and defend scientific investigations, conclusions, or arguments.</p> <p><b>Science 2.2 Nature of Science: Understand the nature of scientific inquiry.</b> 2.2.4 Analyze and evaluate the quality and standards of investigative designs, processes, and procedures. 2.2.5 Understand how science involves testing, revising, and occasionally discarding theories, how inquiry and investigations lead to better understanding of the natural world, and why inquiry cannot lead to absolute truth.</p> <p><b>Science 3.1 Designing Solutions: Apply design processes to develop solutions to human problems or meet challenges using the knowledge and skills of science and technology.</b> 3.1.1 Analyze challenges or problems from local, regional, national, or global contexts in which scientific design can be or has been used to design a solution.</p>	<p>Knowledge Comprehension Application Analysis Synthesis</p>	<p><b>Leadership 1.0 Individual Skills</b> 1.3. The student demonstrates oral, interpersonal, written, and electronic communication and presentation skills and understands how to apply those skills. 1.5 The student is involved in activities that require applying theory, problem-solving, and critical and creative thinking skills while understanding outcomes of related decisions.</p> <p><b>Leadership 2.0 Group Skills</b> 2.1 The student communicates, participates, and advocates effectively in pairs, small groups, teams, and large groups in order to reach common goals. 2.4 The student demonstrates skills that assist in understanding and accepting responsibility to family, community, business, and industry.</p> <p>Leadership Activity: Students demonstrate and develop individual leadership and initiative through planning, monitoring, completing, and presenting a detailed, long-term project.</p>	<p><b>SCANS 1.0 The student identifies, organizes, plans and allocates resources</b> 1.3: Materials and facilities - Acquires, stores, allocates, and uses materials or space efficiently.</p> <p><b>SCANS 2.0 The student demonstrates interpersonal skills in working well with others.</b> 2.1: Participates as a member of a team 2.2: Teachers others new skills</p> <p><b>SCANS 3.0 The student acquires and uses information</b> 3.1: Acquires and evaluates information 3.4: Uses computers to process information</p> <p><b>SCANS 5.0 The student works with a variety of technologies</b> 5.2: Applies Technology to Task - Understands overall intent and proper procedures for setup and operation of equipment.</p>	<p>Use Information Resourcefully Think Strategically</p>	<p>30</p>	<p>Applying skills and content to solve real-world community problems and questions is the focus of those in the biotechnology industry.</p>

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Science 3.2 Science, Technology, and Society:  
Understand that science and technology are human endeavors, interrelated to each other, to society, and to the workplace.

3.2.2 Analyze how the scientific enterprise and technological advances influence and are influenced by human activity.

3.2.4 Analyze the effects of natural events and human activities on the Earth's capacity to sustain biological diversity.