

**Everett Public Schools   
Anatomy and Physiology: Principles of Biomedical Science**

|  |  |  |  |
| --- | --- | --- | --- |
| **Anatomy & Physiology** | | | |
| **CIP Code:**  260102 | | **Total Framework Hours: 180** | |
| **Course:** Anatomy and Physiology / Principles of Biomedical Science | | **Preparatory x** | |
| **Career Cluster:** STEM: Health Science **Cluster Pathway:** STEM **Date Last Modified:** 04/2/12 | | | |
| **CUMMULATIVE SUMMATIVE STANDARDS AND COMPETENCIES** | | | |
| **Performance Assessments:** Students will pass exams with 70% or better on all competency standards for the course. Students will prepare an interactive notebook of course work which a) demonstrates competency in laboratory procedures; b) illustrates an understanding of public health issues; c) explores careers and outlines pathways of interest to the student. Students will participate in simulations each to demonstrate understanding in diagnostics, careers, and laboratory procedures | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **Performance Assessments:** Students demonstrate knowledge of the academic subject matter required for proficiency within various health care careers by preparing a brochure outlining necessary skills and possible academic pathways for a chosen career. Students successfully use and pass an exam on medical terminology. | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **I: Health Sciences Careers Foundation Standards:** a set of broad standards that serve as a foundation for occupations and functions across the health services industry. These standards represent general skill and knowledge, both academic and technical, necessary for all career opportunities within this field.  **C-1 Standard: Academic Foundation** | | | |
|  | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 15 hrs |
| C-1.1 | Read and write, including charts, reports, graphs and manuals. | | |
| C-1.2 | Perform basic mathematical operations and computations. | | |
| C-1.3 | Use medical terminology. | | |
| C-1.4 | Apply knowledge of life sciences, such as biology, chemistry, physics, and human growth and development. | | |
| C-1.5 | Use knowledge of human structure and function. | | |
| C-1.6 | Use knowledge of diseases and disorders. | | |
| C-1.7 | Be aware of the history of health care. | | |
|  | | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | |
| **Reading** | | | |
| 1.2 | Use vocabulary (word meaning) strategies to comprehend text. | | |
| 1.2.2 | Apply strategies to comprehend words and ideas. | | |
| 1.3 | Build vocabulary through wide reading. | | |
| 2.1 | Demonstrate evidence of reading comprehension. | | |
| 2.1.3 | Apply comprehension monitoring strategies during and after reading: determine importance using theme, main idea, and supporting details in grade-level informational/expository text and/or literary/narrative text. | | |
| 2.1.4 | Apply comprehension monitoring strategies for informational and technical materials, complex narratives, and expositions: use prior knowledge. | | |
| 2.1.5 | Apply comprehension-monitoring strategies for informational and technical materials: synthesize ideas from selections to make predictions and inferences. | | |
| 2.1.6 | Apply comprehension-monitoring strategies for informational and technical materials: monitor or meaning, create mental images and generate and answer questions. | | |
| 2.1.7 | Apply comprehension-monitoring strategies for informational and technical materials: determine importance and summarize the text. | | |
| 2.2 | Understand and apply knowledge of text components to comprehend text. | | |
| 2.2.2 | Apply understanding of complex organizational features of printed text and electronic sources. | | |
| 2.2.4 | Apply understanding of text organizational structures | | |
| 3.1 | Read to learn new information. | | |
| 3.1.1 | Analyze web-based and other resource materials (including primary sources and secondary sources) for relevance in answering research questions. | | |
| **Communications** | | | |
| 1.2 | Understands, analyzes, synthesizes, or evaluates information from a variety of sources | | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | | |
| 4.1.2 | Analyzes and evaluates strengths and weaknesses of others’ formal and informal communication using own or established criteria | | |
| **Social Studies** | | | |  |
| 4.2.3 | Analyzes and evaluates how technology and ideas have shaped world history. | | |
| **Writing** | | | |
| 1.3 | Revises to improve text. | | |
| 2.1 | Adapts writing for a variety of audiences. | | |
| 2.4 | Writes for career applications. | | |
|  | | | |
|  |  | | |
| ***SKILLS*** | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **I**  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | | |
| **Relevance to Work: Health Care Professionals:**   * Interact with clients of various ages. * Use medical terminology to communicate information, data and observations. * Provide appropriate service, based on knowledge of disease and body function. * Read, write, speak, and understand English at the level necessary for performing duties. * Participate in delivering appropriate care, based on client’s needs and knowledge. * Communicate with clients while honoring cultural and social diversity. * Modify behavior in order to meet needs of clients. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | | |
| **Performance Assessments: :** Students will use a variety of sources (computer programs, simulations, resources, medical library journals and internet) to research and document up-to-date information on a specific disease. Students will compare and contrast proposed clinical treatment for the disease and present their information in a seminar with their classmates and professionals in the health fields. Health care professional staff will provide insight into practical applications of clinical procedures brought up by the students. | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **C-2 Standard: Information Technology/Collegiate collaboration**  Health care workers use information technology and collaborate to bring research-based applications into clinical application. | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 10 hrs |
| C-2.1 | | Utilize communication technology. | |
| C-2.2 | | Prepare and present research and comparative clinical practices information to peers and a panel of health care professionals. | |
|  | |  | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | |
| **Reading** | | | |
| 3.1 | | Read to learn new information. | |
| 3.1.1 | | Analyze web-based and other resource materials (including primary sources and secondary sources) for relevance in answering research questions. | |
| **Communications** | | | |
| 3.2 | | Uses media and other resources to support presentations. | |
| **Writing** | | | |
| 2.3 | | Writes in a variety of forms/genres. | |
| **Science Standards** | | | |
| 9-12 APPA *Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study and by deciding what research will be funded.  9-12 APPB The *technological design process* begins by defining a problem in terms of *criteria* and *constraints*, conducting research, and generating several different *solutions*.  9-12 APPC Choosing the best *solution* involves comparing alternatives with respect to *criteria* and *constraints*, then building and testing a *model* or other representation of the final design.  9-12 APPD The ability to solve problems is greatly enhanced by use of mathematics and information technologies.  9-12 APPE Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All *solutions* involve consequences, some intended, others not.  9-12 APPF It is important for all citizens to *apply science* and *technology* to critical issues that influence society. | | | |
| **Mathematics Standards** | | | |
| A1.8.A | | Analyze a problem situation and represent it mathematically | |
| A1.8.B | | Select and apply strategies to solve problems | |
| A1.8.C | | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  7.A.2 Work effectively in a climate of ambiguity and changing priorities  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:**  Health Care Professionals use computer programs, resources, medical library journals and the internet to research up-to-date information on diseases or career information. | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Students will research traditional and alternative healthcare delivery facilities to compare and contrast the philosophy, management structures and health care system components of each. Students will create a graphic organizer that illustrates the health care system in their community and one that illustrates an alternative system they researched.  Students will interview local health care providers about ways in which evolving current healthcare trends have demanded system changes and if that has had an effect of health care costs. Students will present their findings to the class. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-3 Standard: Systems**  Health care workers will understand how their role fits an organization’s philosophy, and the overall health care environment. They will identify how key systems affect services they perform and quality of care. | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-3.1 | Understand systems theory. | |
| C-3.2 | Understand the traditional Health Care Delivery System and complimentary/alternative practices. | |
| C-3.3 | Understand System Change. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 3.1 | Read to learn new information. | |
| 3.1.1 | Analyze web-based and other resource materials (including primary sources and secondary sources) for relevance in answering research questions. | |
| 3.2 | Read to perform a task. | |
| 3.2.2 | Apply understanding of complex information, including functional documents, to perform a task. | |
| 3.3 | Read for career applications. | |
| 3.3.1 | Apply appropriate reading strategies for interpreting technical and non-technical documents used in job-related settings. | |
| **Communications** | | |
| 1.1 | Uses listening and observation skills and strategies to focus attention and interpret information. | |
| 1.2 | Understands, analyzes, synthesizes, or evaluates information from a variety of sources. | |
| 2.2.1 | Uses communication skills that demonstrate respect. | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-12 SYSB Systems thinking can be especially useful in *analyzing* complex situations. To be useful, a *system* needs to be specified as clearly as possible.  9-12 SYSC In complex *systems*, entirely new and unpredictable *properties* may emerge. Consequently, modeling a complex *system* in sufficient detail to make *reliable* predictions may not be possible.  9-12 APPA *Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study and by deciding what research will be funded.  9-12 APPB The *technological design process* begins by defining a problem in terms of *criteria* and *constraints*, conducting research, and generating several different *solutions*.  9-12 APPC Choosing the best *solution* involves comparing alternatives with respect to *criteria* and *constraints*, then building and testing a *model* or other representation of the final design.  9-12 APPD The ability to solve problems is greatly enhanced by use of mathematics and information technologies.  9-12 APPE Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All *solutions* involve consequences, some intended, others not.  9-12 APPF It is important for all citizens to *apply science* and *technology* to critical issues that influence society. | | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Leadership:**  2.8 The student will demonstrate the ability to incorporate and utilize the principles of group dynamics in variety of settings.  3.1 The student will analyze the roles and responsibilities of citizenship.  **Suggested Performance Activity:**  Students, by themselves or within groups, provide information to other high school students regarding the responsibilities of a teen using the local health care system. | | |
| **Employability:**  *Systems*   * Understands Systems – knows how social, organizational, and technological systems work and operates effectively with them. * Monitors and Corrects Performance – distinguishes trends, predicts impacts on system operations, diagnose deviations in systems’ performance and corrects malfunctions. * Improves or Designs Systems – suggests modifications to existing systems and develops new or alternative systems to improve performance. | | |
| **Health Care Professionals:**  Understand their “scope of practice” within the health care delivery system.  Work effectively in specialized areas (e.g., aging population, pediatrics, alternative therapies). | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Students will pass, at a minimum of 70%, a written and practical test covering personal blood-borne pathogen prevention standards. Students will demonstrate critical thinking skills when applying these standards in all classroom and health care settings. This assessment will be linked to OSHA, WISHA, MSDS and Center for Disease Control (CDC) standards.  After demonstrating comprehension of district emergency procedure documents students will, in leadership positions, participate in school emergency procedure drills. Students will demonstrate their ability to perform safe practice by adhering to principles of body mechanics and standard precautions with in all classroom and health care settings. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-4 Standard: Safety, Health and Environmental**  Health care workers will understand the existing and potential hazards to clients, coworkers, and to themselves. They will prevent injury or illness through safe work practices and follow health and safety policies and procedures. | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 3 hrs |
| C-4.1 | Understand and demonstrate infection control. | |
| C-4.2 | Employ personal safety practices; comply with pertinent regulatory guidelines including OSHA and WISHA standards. | |
| C-4.3 | Use techniques to insure environmental safety. | |
| C-4.4 | Identify common safety hazards. | |
| C-4.5 | Use emergency procedures and protocols. | |
| C-4.6 | Understand and use MSDS Manuals. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 2.1 | Demonstrate evidence of reading comprehension. | |
| 2.1.4 | Apply comprehension-monitoring strategies for informational and technical materials, complex narratives, and expositions: use prior knowledge. | |
| 2.3 | Expand comprehension by analyzing, interpreting, and synthesizing information and ideas in literary and informational text. | |
| 2.3.1 | Analyze informational/expository text for similarities and differences and cause and effect relationships. | |
| 3.2 | Read to perform a task. | |
| 3.2.2 | Apply understanding of complex information, including functional documents, to perform a task. | |
| **Communications** | | |
| 1.2 | Understands analyses, synthesizes, or evaluates information from a variety of sources. | |
|  |  | |
| **Social Studies – Civics** | | |
|  |  | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
|  | 9-12 APPA *Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study and by deciding what research will be funded.  9-12 APPB The *technological design process* begins by defining a problem in terms of *criteria* and *constraints*, conducting research, and generating several different *solutions*.  9-12 APPC Choosing the best *solution* involves comparing alternatives with respect to *criteria* and *constraints*, then building and testing a *model* or other representation of the final design.  9-12 APPD The ability to solve problems is greatly enhanced by use of mathematics and information technologies.  9-12 APPE Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All *solutions* involve consequences, some intended, others not.  9-12 APPF It is important for all citizens to *apply science* and *technology* to critical issues that influence society. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:**  **Health Care Professionals:** Adhere to standard precautions in workplace according to OSHA, WISHA and CDC guidelines. | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Students will be able to explain how health maintenance (what health looks like and how to maintain health) fits in to the occupational goals of a specific career. The project will include prevention of illness, reduction of health risk factors, alternative health practices and strategies for individuals to manage their own health status (health screenings and examinations) through the eyes of a specific health career. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| Health care workers will understand the fundamentals of wellness and the prevention of disease processes. They will practice preventive health behaviors with and among their clients.  **C-5 Standard: Health Maintenance Practices** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 7 hrs |
| C-5.1 | Be knowledgeable of available preventive health screenings and examinations. | |
| C-5.2 | Be aware of alternative health practices, such as massage therapy and herbal remedies. | |
| C-5.3 | Explain preventive health practices, such as good nutrition and stress management. | |
| C-5.4 | Encourage clients to manage and reduce health risk factors. | |
| C-5.5 | Show knowledge of illness prevention. | |
|  |  | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 3.1  3.1.1 | Read to learn new information. | |
| Analyze web-based and other resource materials (including primary sources and secondary sources) for relevance in answering research questions. | |
| 3.2 | Read to perform a task. | |
| 3.2.2 | Apply understanding of complex information, including functional documents, to perform a task. | |
| 3.3 | Read for career applications. | |
| 3.3.1 | Apply appropriate reading strategies for interpreting technical and non-technical documents used in job-related settings. | |
| **Communications** | | |
| 1.1 | Uses listening and observation skills and strategies to focus attention and interpret information. | |
| 2.1 | Uses language to interact effectively and responsibly in a multicultural context. | |
| 2.2 | Uses interpersonal skills and strategies in a multicultural context to work collaboratively, solve problems, and perform tasks. | |
|  |  | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-12 APPA *Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study and by deciding what research will be funded.  9-12 APPD The ability to solve problems is greatly enhanced by use of mathematics and information technologies.  9-12 APPE Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All *solutions* involve consequences, some intended, others not.  9-12 APPF It is important for all citizens to *apply science* and *technology* to critical issues that influence society. | | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:**  **Health Care Professionals:** Teach health principles to clients and family. | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Students will demonstrate understanding of treatment planning for a specific disease dealt with in a specific therapeutic service area utilizing and interpreting information from medical documents, applying knowledge of medical terminology and ICD-9 codes. Students will choose 3-5 diagnostic procedures to research and report out to the class, or in a daily journal. Student will be able to discuss nosocomial infections, MRSA, and methods of hazardous waste disposal. **CLIENT INTERACTION?!** | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-6 Standard: Technical Skills for Health Care Professionals**  Health care workers will apply technical skills required for all career specialties. They will demonstrate skills and knowledge as appropriate to career strand. | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-6.1 | Demonstrate skill and knowledge appropriate for the career strand. | |
| C-6.2 | Demonstrate successful client interaction | |
| C-6.3 | Communicate client information among team members allowing for feedback | |
| C-6.4 | Understand treatment planning and implementation within a scope of practice. | |
| C-6.5 | Explore career options in the therapeutic services area (such as nursing, physicians, physical therapist, speech pathologist, dental hygienists, respiratory therapists, emergency medical technicians, etc). | |
| C-6.3 | Read and interpret information from medical documents, applying knowledge of medical terminology and ICD-9 codes | |
| C-6.4 | Examine the most frequently used diagnostic procedures. | |
| C-6.1 | Maintain a clean and healthy environment and demonstrate best practices to reduce or eliminate pathogenic organisms. | |
|  |  | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
|  |  | |
| **Communications** | | |
| 1.1 | Uses listening and observation skills and strategies to focus attention and interpret information. | |
| 2.1 | Uses language to interact effectively and responsibly in a multicultural context. | |
| 2.2.1 | Uses communication skills that demonstrate respect. | |
| 2.3 | Uses skills and strategies to communicate interculturally. | |
| 3.3.1 | Applies skills and strategies for the delivery of effective oral communication and presentations | |
| **Science Standards** | | |
| 9-12 APPA *Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study and by deciding what research will be funded.  9-12 APPB The *technological design process* begins by defining a problem in terms of *criteria* and *constraints*, conducting research, and generating several different *solutions*.  9-12 APPC Choosing the best *solution* involves comparing alternatives with respect to *criteria* and *constraints*, then building and testing a *model* or other representation of the final design.  9-12 APPD The ability to solve problems is greatly enhanced by use of mathematics and information technologies.  9-12 APPE Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All *solutions* involve consequences, some intended, others not.  9-12 APPF It is important for all citizens to *apply science* and *technology* to critical issues that influence society. | | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:** Health Care Professionals:  Communicate procedures to clients in oral and written formats. | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Students will be presented with a “crime scene” with DNA evidence left behind. They will work in small groups to uncover the identity of the crime perpetrator using lab analysis of the DNA fingerprinting and gel electrophoresis. Students will demonstrate understanding of the forensic process using simulations. Students will investigate career options in the Biotechnology field. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-10 Standard: Biotechnology Strand Standards** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-10.1 | Understand and be able to present definition of biotechnology | |
| C-10.2 | Understand the concept of DNA, genes, and identity | |
| C-10.3 | Research current uses of biotechnology in health care | |
| C-10.5 | Discuss and debate the ethical implications of various issues in biotechnology or bioengineering | |
| C-10.6 | Explore careers in the Biotechnology field. | |
| C-10.7 | Understand how biotechnology is used in forensic science. | |
| C-10.8 | Understand and practice gel electrophoresis and its use in DNA fingerprinting. | |
| C-10.9 | Be able to identify a potential perpetrator based on DNA evidence collected at a crime scene. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 2.1 | Demonstrate evidence or reading comprehension. | |
| **Communications** | | |
| 1.2 | Understands, analyzes, synthesizes, or evaluates information from a variety of sources. | |
| 1.2.2 | Evaluates the effect of bias and persuasive techniques in mass media. | |
| 2.1.1 | Analyzes the needs of the audience, situation, and setting to adjust language and other communication strategies. | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | |
| 3.2 | Uses media and other resources to support presentation. | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-12 SYSB | Systems thinking can be especially useful in analyzing complex situations. To be useful, a *system* needs to be specified as clearly as possible. | |
| 9-12 SYSC | In complex *systems*, entirely new and unpredictable *properties* may emerge. Consequently, modeling a complex *system* in sufficient detail to make *reliable* predictions may not be possible. | |
| 9-12 APPE | Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All solutions involve consequences, some intended others not. | |
| 9-11 LS1E | The *genetic information* responsible for inherited *characteristics* is encoded in the DNA molecules in *chromosomes*. DNA is composed of four subunits (A,T,C,G). The sequence of subunits in a *gene* specifies the amino acids needed to make a protein. *Proteins* express inherited traits (e.g., eye color, hair texture) and carry out most cell *function*. | |
| 9-11 LS1H | Genes are carried on *chromosomes*. Animal cells contain two copies of each *chromosome* with *genetic information* that regulate body structure and *functions*. Cells divide by a process called *mitosis,* in which the *genetic information* is copied so that each new cell contains exact copies of the original *chromosomes*. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Leadership:**  1.3 Demonstrate oral, interpersonal, written, and electronic communication and presentation skills and understand how to apply those skills.  **Suggested Performance Activity:**  Students will have a class debate regarding the financing of biotechnology devises (such as artificial limbs or insulin pumps). Who should pay for these devices? Individuals? Government? Private health insurance? Other? Have a small group prepare a 3-5 minute proposal about why their preferred method of payment is the best, and which is the worst. Cover as many options as possible and guide the students in thinking about how health care involves trade-offs.  Students are charged with inventing a new biotechnology device (on paper) to present to a group of positional funders. Small group activity. | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism   * 7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | | |
| **Performance Assessments:** Students will achieve 70% or better in written, discussion, and group activities related to theory and laboratory performance based competencies. During laboratory sessions, the students will demonstrate knowledge, respect, and appropriate professional behavior while working with equipment and dissection of animal specimens as observed by the instructor. Students will dissect various organs and animals to understand the fundamentals of anatomy. Simulations will also be used to enhance and increase the number of dissections. Students will complete a variety of labs and simulations designed to increase understanding of the physiology of the human body. Students will use appropriate vocabulary throughout the course.  Students will demonstrate proficiency in the use of microscopes. | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **C-11 Standard: Anatomy and Physiology Basics** | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 5 hrs |
| C-11.1 | | Recognizes and names the main body regions/cavities | |
| C-11.2 | | Understands and properly uses anatomical directional terms | |
| C-11.3 | | Explains homeostasis | |
| C-11.4 | | Identifies and demonstrates understanding of the 11 basic body systems: Skeletal, Muscular, Integumentary, Respiratory, Cardiac, Lymphatic, Nervous, Endocrine, Digestive, Excretory, and Reproductive. | |
|  | | | |
|  | | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | |
| **Reading** | | | |
| 2.1.5 | | Apply comprehensive monitoring strategies for informational and technical materials, complex narratives, and expositions: synthesizes ideas from selections to make predictions and inferences. | |
| 2.3.4 | | Synthesize information from a variety of sources | |
| 3.2 | | Read to perform a task. | |
| **Communications** | | | |
| 2.1 | | Uses language to interact effectively and responsibly in a multicultural context. | |
| 2.2.2 | | Applies skills and strategies to contribute responsibly in a group setting. | |
| **Writing** | | | |
| 3.1.1 | | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | | Develops ideas and organizes writing | |
| 3.3 | | Knows and applies writing conventions appropriate for the grade level. | |
| **Art** | | | |
|  |  | | |
| **Science Standards** | | | |
| 9-12 SYSA  *Feedback* is a process in which the *output* of a *system* provides information used to regulate the operation of the *system*. *Positive feedback* increases the disturbance to a *system*. *Negative feedback* reduces the disturbance to a *system*.  9-12 SYSD  Systems can be changing or in equilibrium.  9-11 LS1C  Cells contain specialized parts for determining essential *functions* such as regulation of cellular activities, *energy* capture and release, formation of proteins, waste disposal, the *transfer* of information, and movement.  9-11 LS1D  The cell is surrounded by a membrane that separates the interior of the cell from the outside world and determines which substances may enter and which may leave the cell.  9-11 LS1F  All of the *functions* of the cell are based on *chemical reactions*. Food *molecules* are broken down to provide the *energy* and the chemical constituents needed to synthesize other *molecules*. Breakdown and synthesis are made possible by proteins called *enzyme*s.  Some of these *enzymes* enable the cell to store *energy* in special chemicals, such as ATP, that are needed to drive the many other *chemical reactions* in a cell. | | | |
| **Mathematics Standards** | | | |
| A1.8.A | | Analyze a problem situation and represent it mathematically | |
| A1.8.B | | Select and apply strategies to solve problems | |
| A1.8.C | | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Label the bones, bony landmarks, joints and functions on a skeletal diagram, and a disarticulated and articulated skeleton.  Draw bone tissue using microscopic images. Research and present a skeletal disease/ disorder/condition or diagnostic exam, and present findings to the group. Students will be able to identify bones, bony landmarks, joints and functions on a real human skeleton. Students will discuss the function of a simple lever in small groups and describe the lever to the rest of the groups. Students will be able to discuss homeostasis of bone tissue. Students will participate in lab activities and simulations to identify the effects of nutrition, hormones, exercise, fractures and aging on bone development and on the skeletal system as well as the microscopic structure and function of bone tissue.  Correctly use anatomical terminology to describe joint movement. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-12 Standard: Skeletal System** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit: 10** |
| C-12.1 | Demonstrates knowledge of the appendicular skeleton | |
| C-12.2 | Demonstrates knowledge of the axial skeleton | |
| C-12.3 | Demonstrates knowledge of articulations | |
| C-12.4 | Describe three types of joints | |
| C-12.5 | Demonstrates knowledge of 2 or more skeletal disorders | |
| C-12.6 | Identify the cell types in bone and list their major functions. | |
| C-12.7 | Discuss the effects of nutrition, hormones, exercise, and aging on bone development and on the skeletal system. | |
| C-12.8 | Describe the types of fractures and how they heal. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 1.3 | Build vocabulary through wide reading | |
| 2.1 | Demonstrate evidence of reading comprehension. | |
| **Communications** | | |
| 3.1.1 | Applies skills to plan and organize effective oral communication and presentations. | |
| 4.1.1 | Analyzes and evaluates strengths and weaknesses of one’s own communication using own or established criteria | |
| **Social Studies – Civics** | | |
|  |  | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-11 PS2I | The rate of a physical or *chemical change* may be affected by *factors* such as temperature, surface area, and pressure. | |
| 9-11 PS2F | All forms of life are composed of large molecules that contain carbon. Carbon *atoms* bond to one another and other *elements* by sharing, forming *covalent bond*s. Stable molecules of carbon have four *covalent bond*s per carbon *atom*. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** **:** Students will compare and contrast the different types of tissues that make up the skin. Construct/Draw, color, or label a diagram of the 3 skin layers. Describe the main functions of each layer of the skin. Contrast and compare various skin lesions and cancers. Research measures to prevent common skin ailments and discuss treatment/therapies for the same. Describe how the skin’s role in maintaining homeostasis for the rest of the body and how the skin responds to diseases and injury and repairs itself. Students will research and describe common diagnostic tests used with the integumentary system. Students will participate in a lab activity to dissect a pig foot to see the various types of tissues. Students will participate in case studies of how the skin can be a diagnostic aid in many conditions. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-13 Standard: Integumentary System** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-13.1 | Demonstrates knowledge of the 3 main layers of skin, the epidermis, the dermis, and the subdermis/subcutaneous layer. | |
| C-13.2 | Able to state 3-5 function of skin | |
| C-13.3 | Understands and explains possible diseases and injuries to the skin (blister, athlete’s foot, sunburn, skin cancer, albinism) | |
| C-13.4 | Discusses common diagnostic tests used with the integumentary system. | |
| C-13.5 | Describe the mechanism of hair production and explain the structural basis for hair structure and color. | |
| C-13.6 | Describe the various glands of the skin and secretions of each and their function. | |
| C-13.7 | Describe how skin responds to injury and repairs itself | |
| C-13.8 | Summarize the effects of the aging process on the skin. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 3.1 | Read to learn new information | |
| 3.2 | Read to perform a task | |
| **Communications** | | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-11 LS2A | *Matter* and *energy* is *transferred* and cycled through living and nonliving components in *ecosystems*. The cycling of *matter* and *energy* is important for maintaining the health and sustainability of an *ecosystem*. | |
| 9-11 LS3C | The great *diversity* of *organisms* is the result of more than 3.5 billion years of *evolution* that has filled available *ecosystem niches* on Earth with life forms. | |
| 9-11 LS3B | Random changes in the *genetic* makeup of cells and *organisms* (*mutations*) can cause changes in their physical *characteristics* or behaviors. If the *genetic mutations* occur in eggs or sperm cells, the changes will be inherited by offspring. While many of these changes will be harmful, a small minority may allow the offspring to better survive and reproduce. | |
|  |  | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Label a human muscles diagram with the appropriate musculature terminology.  Describe the differences in type and location of the smooth, skeletal (striated) and cardiac muscles. Identify a minimum of 40 major muscles. Understand antagonistic muscle pairs and use that information to demonstrate movement of various body parts through the participation in a Chicken Wing Lab. Demonstrate an understanding of the mechanism of muscle contraction. Understand how sports injuries are related to muscle anatomy and physiology. Research a disease or disorder of the muscular system and create and present the information to the rest of the class. Students will understand how to maintain muscular health and the differences between aerobic and anaerobic muscle activity. Students will use a variety of muscle and bone simulations to see the interrelationship between those systems. Students will discuss the energy and matter transfers and transformations in the muscle cell and muscular system. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-14 Standard: Muscular System** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-14.1 | Discuss the three types of muscle tissue and their similarities and differences: cardiac, skeletal and smooth. | |
| C-14.2 | Demonstrate knowledge of the names of skeletal muscles in the human body | |
| C-14.3 | Discuss differences between aerobic and anaerobic muscle activity | |
| C-14.4 | Knowledgeable of the process required for muscle contraction | |
| C-14.5 | Able to discuss possible diseases or disorders involving the muscular system | |
| C-14.6 | *Describe* a situation in which energy is *transformed* from one *form* to another and *explain how* energy is conserved. | |
| C-14.7 | Calculate the *kinetic energy* of an object, given the object’s *mass* and velocity. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 3.1 | Read to learn new information. | |
| **Communications** | | |
| 3.3 | Uses effective delivery. | |
| 4.2 | Sets goals for improvement. | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-11 PS3A | Although energy can be *transferred* from one object to another and can be *transformed* from one *form* of energy to another form, the total energy in a *closed system* is constant and can neither be created nor destroyed. (*Conservation of Energy*) | |
| 9-11 PS3B | *Kinetic energy* is the energy of *motion*. The kinetic energy of an object is defined by the equation: Ek = ½ mv2 | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments.**Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | | |
| **Performance Assessments** Compare and contrast the male and female reproductive structure and function. Students will discuss the hormonal and neural mechanisms which regulate human reproduction. Discuss the socio-cultural implications of menarche and male and female reproductive systems, sexuality, and aging. Students will explain embryology and the development of a fertilized egg. Students will compare and contrast the various methods of birth control. Students will research and discuss disorders of the human reproductive system and congenital abnormalities. Students will participate in simulations demonstrating embryology. Students will participate in a karyotyping lab/simulation of a karyotyping lab to see the ways in which Biotechnology is used in diagnosis. Students will research and discuss various genetic disorders and their treatment/prognosis. | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **C-15 Standard: Reproductive System** | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 10 hrs |
| C-15.1 | | Describe the male reproductive system | |
| C-15.2 | | Describe the female reproductive system | |
| C-15.3 | | Demonstrate understanding of the menstrual cycle | |
| C-15.4 | | Explain development of a fertilized egg cell and its differentiation into tissues and organs (embryology) | |
| C-15.5 | | Knowledge of birth control methods, effectiveness, misconceptions and myths. | |
| C-15.6 | | Identify and discuss disorders of the human reproductive system, including congenital abnormalities, cancers, infections and functional problems. | |
|  | | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | |
| **Reading** | | | |
| 2.3.2 | | Evaluate informational materials, including electronic sources, for effectiveness. | |
| 2.3.4 | | Synthesize information from a variety of sources. | |
| **Communications** | | | |
| 1.1 | | Uses listening and observation skills and strategies to focus attention and interpret information. | |
| 2.1 | | Uses language to interact effectively and responsibly in a multicultural context. | |
| 2.2.1 | | Uses communication skills that demonstrate respect. | |
| 2.3.1 | | Analyzes the influence of cultural principles, beliefs, and world views on intercultural communication. | |
| 2.3.2 | | Creates personal intercultural communication norms to guide one’s self in a diverse social system. | |
| **Social Studies – Civics** | | | |
|  | |  | |
| **Writing** | | | |
| 3.1.1 | | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | | Develops ideas and organizes writing | |
| 3.3 | | Knows and applies writing conventions appropriate for the grade level. | |
| **Art** | | | |
|  |  | | |
| **Science Standards** | | | |
| 9-12 INQC | | Conclusions must be logical, based on *evidence*, and consistent with prior *established* knowledge. | |
| 9-12 INQH | | Scientists carefully *evaluate* sources of information for *reliability* before using that information. When referring to the *ideas* or findings of others, they cite their sources of information. | |
| 9-11 LS1I | | Egg and sperm cells are formed by a process called *meiosis* in which each resulting cell contains only one representative *chromosome* from each pair found in the original cell. *Recombination* of *genetic information* during *meiosis* scrambles the *genetic information*, allowing for new *genetic* combinations and *characteristics* in the offspring. Fertilization restores the original number of *chromosome* pairs and reshuffles the *genetic information*, allowing for *variation* among offspring. | |
| **Mathematics Standards** | | | |
| A1.8.A | | Analyze a problem situation and represent it mathematically | |
| A1.8.B | | Select and apply strategies to solve problems | |
| A1.8.C | | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments.**Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | | | |
| **Performance Assessments:** Draw, label, and describe the functions of the main parts of the urinary system, including the kidneys, bladder, ureters, and urethra. Research a medical condition or disease process related to the urinary system and present information to the class. List 5 things you can test urine for (i.e. pregnancy, blood sugar, infections, drugs/tox screen, concentration etc.). Students will participate in a Urinalysis Lab and Kidney dissection/simulation. Students will utilize case studies for kidney disorders. Students will also participate in a visit/virtual visit to UW School of Medicine/Snohomish County Medical Examiner/Morgue. | | | | |
| ***STANDARDS AND COMPETENCIES*** | | | | |
| **C-16 Standard: Excretory System** | | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 10 hrs | |
| C-16.1 | Discuss function of the excretory system | | | |
| C-16.2 | Describe the function, location and simple anatomy of kidneys, bladder, ureters and urethra | | | |
| C-16.3 | Knowledgeable of the components of urine | | | |
| C-16.4 | List purposes for urinalysis and discuss the meaning of results. | | | |
| C-16.5 | Knowledgeable of 1 or more disorder of the excretory system. | | | |
|  | | | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | | |
| **Reading** | | | | |
| 3.2 | Read to perform a task. | | | |
| 3.3 | Read for career applications. | | | |
| **Communications** | | | | |
| 2.1.1 | Analyzes the needs of the audience, situation, and setting to adjust language and other communication strategies. | | | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | | | |
| **Social Studies - Civics** | | | | |
|  |  | | | |
| **Writing** | | | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | | | |
| 3.1 | | Develops ideas and organizes writing | |
| 3.3 | | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | | | |
| 9-11 PS2H | *Solutions* are *mixtures* in which particles of one substance are evenly distributed through another substance. *Liquids* are limited in the amount of dissolved *solid* or *gas* that they can contain. *Aqueous solutions* can be described by relative quantities of the dissolved substances and acidity or alkalinity (pH). | | | |
| **Mathematics Standards** | | | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | | | |
| A1.8.B | Select and apply strategies to solve problems | | | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | | | |
| ***SKILLS*** | | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments.**Analytical, Logical & Creative Thinking (check those that students will demonstrate in this lesson):** | | | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Determine ideal caloric intake based on BMI and activity levels.  In small groups research and teach the class about an organ involved in digestion (its structure and function).  In small groups, students discuss how socio-economic, cultural and regional factors effect nutrition, especially the issues surrounding obesity and obesity-related conditions. (examples: How cost of food impacts purchases, ease of acquisition and nutrition, is there a correlation? Does religion/culture/nation of origin play a role in nutrition? etc.)  Students will successfully trace the process of digestion of a “Big Mac” mentioning hormones, enzymes, and organs involved in the process.  Students will use technology to complete a dietary analysis of themselves and write a report/reflection. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-17 Standard: Digestive System** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-17.1 | Describe the anatomy and physiology of the digestive system. | |
| C-17.2 | List the 3 main nutrients and their products after digestion (carbohydrates, proteins, fats) | |
| C-17.3 | Discuss hormones and accessory organs involved in digestion | |
| C-17.4 | Describe and plan a healthy diet. | |
| C-17.5 | Research diagnostic procedures used to detect diseases or disorders of the digestive system | |
| C-17.6 | Understanding of common digestive disorders, such as heartburn, GERD, ulcers, diarrhea and constipation. | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 1.3 | Build vocabulary through wide reading. | |
| **Communications** | | |
| 1.2.2 | Evaluated the effect of bias and persuasive techniques in mass media. | |
| 2.2.1 | Uses communication skills that demonstrate respect | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | |
| 2.3.2 | Creates personal intercultural communication norms to guide one’s self in a diverse social system. | |
| **Social Studies - Civics** | | |
|  |  | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-12 APPA | *Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study, and by deciding what research will be funded. | |
| 9-11 ES2D | The earth does not have infinite resources; increasing human consumption places severe stress on the natural processes that renew some resources and it depletes those resources that cannot be renewed. | |
| 9-11 LS1F | All of the *functions* of the cell are based on *chemical reactions*. Food molecules are broken down to provide the energy and the chemical constituents needed to synthesize other molecules. Breakdown and synthesis are made possible by proteins called *enzyme*s. Some of these *enzymes* enable the cell to store energy in special chemicals, such as ATP, that are needed to drive the many other *chemical reactions* in a cell. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments.**Analytical, Logical &** | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | | |
| **Performance Assessments:** **:** Write a paragraph on the route of air passage from the nose to the alveolar sacs and describe the diffusion process that occurs in the lungs. Discuss the environmental factors (such as allergens, toxins, infectious agents, drugs) that affect the respiratory system and the development of diseases such as asthma, emphysema COPD, pneumonia, tuberculosis, etc. Demonstrate use of spirometer. Students will discuss the implications of injuries to respiratory organs and therapeutic measures to maintain homeostasis. Students will participate in problem solving case studies. Students will discuss the effects of exercise on respiration rates and the interactions between the respiratory system on other body systems. | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **C-18 Standard: Respiratory System** | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 10 hrs |
| C-18.1 | | Describe anatomy of lungs, to include bronchi, and alveoli. | |
| C-18.2 | | Describe diffusion exchange of gases | |
| C-18.3 | | Define inspiration and expiration | |
| C-18.4 | | Develop an understanding of respiratory diseases and/or disorders such as: the common cold, flu, asthma, cystic fibrosis, pneumonia, tuberculosis, etc. | |
|  | | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | |
| **Reading** | | | |
|  | |  | |
| **Communications** | | | |
| 3.1.1 | | Applies skills and strategies for the delivery of effective oral communication and presentations. | |
| **Writing** | | | |
| 3.1.1 | | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | | Develops ideas and organizes writing | |
| 3.3 | | Knows and applies writing conventions appropriate for the grade level. | |
| **Art** | | | |
|  |  | | |
| **Science Standards** | | | |
|  | |  | |
| **Mathematics Standards** | | | |
| A1.8.A | | Analyze a problem situation and represent it mathematically | |
| A1.8.B | | Select and apply strategies to solve problems | |
| A1.8.C | | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Adapt to Change**  7.A.1 Adapt to varied roles, jobs responsibilities, schedules and contexts  7.A.2 Work effectively in a climate of ambiguity and changing priorities  **Implement Innovations**  1.C.1 Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | | |
| **Performance Assessments:** Demonstrate use of EKG probe ware to generate an EKG reading and interpret the resulting graph.  Trace the pathway of blood through the heart, and differentiate between oxygenated and deoxygenated blood.  Compare and contrast the types of blood vessels in terms of structure and function.  List and define the main components of cholesterol (HDL, LDL, triglycerides) and note ideal ranges for each component and total cholesterol.  Correctly demonstrate how to take a blood pressure to include: normal ranges for an adult. Demonstrate how to measure pulse rate and vital signs.  Pass a test with 70% or better on the components of blood and their functions in the body and blood types including genetics of blood type inheritance.  Research and discuss the possible risk factors of one cardiovascular disorder.  Understand blood type inheritance, blood buffers and other components (structure and function) of the blood by participating in a a blood typing lab.  Understand blood clotting mechanism by drawing and describing the process. | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **C-19 Standard: Cardiovascular System** | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 10 hrs |
| C-19.1 | | Demonstrates knowledge of the anatomy of the heart | |
| C-19.2 | | Explains the pathway of blood through the heart | |
| C-19.3 | | Knowledgeable of similarities and differences among arteries, veins, capillaries | |
| C-19.4 | | Describes how blood pressure is measured and states healthy parameters, discuss gradient pressure within arterial walls. | |
| C-19.5 | | Describes the function and structure of the components of blood (Red Blood Cells, White Blood Cells, platelets, Plasma) | |
| C-19.6 | | Discuss possible risk factors (age, weight, smoking, exercise, personality type, other lifestyle choices) of cardiovascular disorders such as: Myocardial Infarction, Aneurysm, Atherosclerosis and arteriosclerosis. | |
| C-19.7 | | Discuss the electrical system responsible for cardiac contraction and can perform an EKG and read resulting chart. | |
|  | | Understand blood type inheritance, blood buffers and other components (structure and function) of the blood. | |
|  | | Understand blood clotting mechanism. | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | |
| **Reading** | | | |
| 3.1 | | Read to learn new information. | |
| **Communications** | | | |
| 1.2 | | Understands, analyzes, synthesizes or evaluated information from a variety of sources. | |
| 1.2.2 | | Evaluates the effect of bias and persuasive techniques in mass media. | |
| 2.2 | | Uses interpersonal skills and strategies in a multicultural context to work collaboratively, solve problems, and perform tasks. | |
| **Writing** | | | |
| 3.1.1 | | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | | Develops ideas and organizes writing | |
| 3.3 | | Knows and applies writing conventions appropriate for the grade level. | |
| **Art** | | | |
|  |  | | |
| **Science Standards** | | | |
| 9-12 SYSD | | Determine whether a *state* of equilibrium is *static* or *dynamic* (i.e., inflows equal outflows). | |
| 9-11 PS1D | | A net *force* will cause an object to accelerate or change direction. A less massive object will *speed* up more quickly than a more massive object subjected to the same *force*. (Newton’s 2nd *Law* of *Motion*, F=ma) | |
| 9-11 PS1G | | Electrical *force* is a *force* of nature, independent of *gravity* that exists between charged objects. Opposite charges attract while like charges repel. | |
| 9-11 PS2D | | *Ions* are produced when *atoms* or molecules lose or gain *electrons*, thereby gaining a positive or negative electrical charge. *Ions* of opposite charge are attracted to each other, forming *ionic bonds*. Chemical formulas for *ionic compounds* represent the proportion of *ion* of each *element* in the *ionic array*. | |
| **Mathematics Standards** | | | |
| A1.8.A | | Analyze a problem situation and represent it mathematically | |
| A1.8.B | | Select and apply strategies to solve problems | |
| A1.8.C | | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Adapt to Change**  7.A.1 Adapt to varied roles, jobs responsibilities, schedules and contexts  7.A.2 Work effectively in a climate of ambiguity and changing priorities  **Implement Innovations**  1.C.1 Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments.**Analytical, Logical &** | | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** List the three interrelated functions of the Lymphatic system (remove interstitial fluid, transportation of fatty acids and fats, and transport of cells responding to an immune response).  Discuss the relationship between cancer and the lymphatic system. Discuss the importance of the lymphocytes and their distribution in the body.  Discuss various diseases like AIDS and autoimmune diseases and explain the treatments involved.  Students will participate in a microscopic/simulation examination of lymphatic tissue.  Research disorders of the lymphatic system, especially lymphedema  Students will research and discuss the historic development of artificial immunity.  Students explain the importance of stem cells and immunotherapy.  Describe the structure and functions of different types of antibodies.  Describe and provide examples of the primary and secondary responses to antigen exposure.  Demonstrate and understanding of immunology by passing an exam with a minimum of 70%. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-20 Standard: Lymphatic System** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-20.1 | Describe the lymphatic system | |
| C-20.2 | List the three interrelated functions of the Lymphatic system (remove interstitial fluid, transportation of fatty acids and fats, and transport of cells responding to an immune response). | |
| C-20.3 | Discuss the importance of the lymphatic system in terms of cancer | |
| C-20.4 | Explain the difference between non-specific and specific defense and the role of lymphocytes in the immune system | |
| C-20.5 | Research disorders of the lymphatic system, especially lymphedema. | |
| C-20.6 | Describe the structure of the lymphoid tissues and organs and explain their functions. | |
|  | Understand how the immune system works. | |
| C-20.7 | Describe the structure of an antibody and discuss the types of antibodies in body fluids and secretions, and their functions | |
| C-20.8 | Describe the primary and secondary responses to antigen exposure. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 3.3.1 | Apply appropriate reading strategies for interpreting technical and non-technical documents used in a job-related setting. | |
| **Communications** | | |
| 1.2 | Understands, analyzes, synthesizes, or evaluates information from a variety of sources. | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | |
| **Social Studies - Civics** | | |
|  |  | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-11 LS1C | Cells contain specialized parts for determining its essential *functions*, such as regulation of cellular activities, energy capture and release, formation of proteins, waste disposal, the *transfer* of information, and movement. | |
| 9-11 LS1D | The cell is surrounded by a membrane that separates the interior of the cell from the outside world and determines which substances may enter and which may leave the cell. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Adapt to Change**  7.A.1 Adapt to varied roles, jobs responsibilities, schedules and contexts  7.A.2 Work effectively in a climate of ambiguity and changing priorities  **Implement Innovations**  1.C.1 Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** In small groups, draw an endocrine disorder out of the hat and teach a lesson describing the symptoms, diagnosis, path physiology, epidemiology, incidence in society and any group differences, treatments and outcome expectations. Discuss how technology can be used in diagnosis and/or treatment.  Pass a test on the endocrine system (organs, hormones, feedback loops, and diseases or disorders) with 70% or better.  Describe the hormonal responses to stress and the general adaptation syndrome.  Describe ways that scientific ideas have influenced society’s reaction to disorders such as Type 1 and 2 Diabetes, dwarfism, hypo and hyperthyroidism. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-21 Standard: Endocrine system** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-21.1 | Knowledgeable of major glands and organs including the thyroid, parathyroid, liver, pancreas, kidney, adrenal glands, ovaries and testes. | |
| C-21.2 | Demonstrates understanding of feedback loops within the endocrine system. | |
| C-21.3 | Knowledgeable of diseases and disorders of the endocrine system. May include: diabetes, hypothyroidism, hyperthyroidism, metabolic syndrome, etc. | |
| C-21.4 | Explain the importance of intercellular communication and describe the mechanisms involved. | |
| C-21.5 | Compare the cellular components of the endocrine system with those of others tissues and systems. | |
| C-21.6 | Compare the major structural classes of hormones, and explain the general mechanisms of hormonal action. | |
| C-21.7 | Describe how endocrine organs are controlled | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 2.2.4 | Apply understanding of text organizational structures. | |
| **Communications** | | |
| 3.1.1 | Applies skills to plan and organize effective oral communication and presentation. | |
| **Social Studies - Civics** | | |
|  |  | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-12 SYSA | *Feedback* is a process in which the *output* of a *system* provides information used to regulate the operation of the *system*. *Positive feedback* increases the disturbance to a *system*. *Negative feedback* reduces the disturbance to a *system*. | |
| 9-12 APPA | *Science* affects society and cultures by influencing the way many people think about themselves, others, and the *environment*. Society also affects *science* by its prevailing views about what is important to study, and by deciding what research will be funded. | |
| 9-12 APPB | The *technological design process* begins by defining a problem in terms of *criteria* and *constraints*, conducting research, and generating several different solutions. | |
| 9-12 APPE | Perfect *solutions* do not exist. All technological *solutions* involve *trade-offs* in which decisions to include more of one quality means less of another. All solutions involve consequences, some intended others not. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Adapt to Change**  7.A.1 Adapt to varied roles, jobs responsibilities, schedules and contexts  7.A.2 Work effectively in a climate of ambiguity and changing priorities  **Implement Innovations**  1.C.1 Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Draw a diagram of the brain and label each lobe and define the function associated with each lobe and major brain region.  Explore the physiological effects of drugs and alcohol on the central nervous system.  Students will use simulations/online resources to investigate how we use technology to learn about the structure and function of the human brain, various pathologies, and diseases. Students will report out on one specific pathology- its treatment, diagnosis, and prognosis incorporating brain plasticity.  Pass a written test with 70% or better on neurons, the autonomic, sympathetic and parasympathetic nervous systems, and be able to document changes in the body associated with each. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-22 Standard: Nervous system** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit:** 10 hrs |
| C-22.1 | Draw a representation of the anatomy of a neuron and synapse | |
| C-22.2 | Define, describe and discuss the central nervous system | |
| C-22.3 | Define, describe and discuss the peripheral nervous system | |
| C-22.4 | Knowledgeable of diseases and disorders of the nervous system, possibly including: Alzheimer’s, ALS, Bell’s Palsy, epilepsy, meningitis, multiple sclerosis, Parkinson’s disease, etc. | |
| C-22.5 | Draw a diagram of the brain and label each lobe and define the function associated with each lobe. | |
|  | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| 3.1 | Read to learn new information | |
| **Communications** | | |
| 2.2.2 | Applies skills and strategies to contribute responsibly in a group setting. | |
| **Social Studies - Civics** | | |
|  |  | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-11 LS1C | Cells contain specialized parts for determining its essential *functions*, such as regulation of cellular activities, energy capture and release, formation of proteins, waste disposal, the *transfer* of information, and movement. | |
| 9-11 LS1D | The cell is surrounded by a membrane that separates the interior of the cell from the outside world and determines which substances may enter and which may leave the cell. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |
| **Relevance to Work:** Health Care workers must understand the basics of anatomy and physiology and medical terminology in order to be an effective member of the health care team. | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | | |
| **Performance Assessments:** Draw, label, and describe the components of the human eye, nose, mouth and ear.  Describe the processes involved in hearing, seeing and smelling and trace the neural pathway of a sensation from sensory receptor to the brain.  Explain the reasons for hearing and vision loss. Explain possible means of prevention and the diagnosis and treatment of disease.  Discuss balance, equilibrium and proprioception  Describe function and purpose of olfactory and gustatory receptors  Participate in lab activities where they will analyze and experience different sensations. Participate in a sensation and perception lab activity.  Pass a test with 70% or better on the special senses including the anatomy and physiology of these senses and general chemistry and physics of sound and odor. | | | |
| ***STANDARDS AND COMPETENCIES*** | | | |
| **C-23 Standard: Special Senses** | | | |
| **Competencies C=Core A=Advanced** | | | **Total Learning Hours for Unit:** 10 hrs |
| C-23.1 | | Visually represent the anatomic components of the human eye (Cornea, iris, pupil, lens, vitreous humor, retina, optic disk and optic nerve). Ear and nose. | |
| C-23.2 | | Describe the difference in shape, number and function of the rod and cone cells of the retina | |
| C-23.3 | | Describe the processes involved in hearing, seeing and smelling | |
| C-23.4 | | Describe the roles of the outer, middle and inner ear. | |
| C-23.5 | | Describe function and purpose of olfactory and gustatory receptors | |
| C-23.6 | | Discuss balance, equilibrium and proprioception | |
|  | | Describe the process of taste and identify location and types of taste receptors on the tongue. | |
|  | | Describe how taste and smell are related. | |
|  | | | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | | |
| **Reading** | | | |
| 3.1 | | Read to learn new information. | |
| 3.1.1 | | Analyze web-based and other resource materials (including primary sources and secondary sources) for relevance in answering research questions. | |
| 3.2 | | Read to perform a task. | |
| 3.2.2 | | Apply understanding of complex information, including functional documents, to perform a task. | |
| 3.3 | | Read for career applications. | |
| 3.3.1 | | Apply appropriate reading strategies for interpreting technical and non-technical documents used in job-related settings. | |
| **Social Studies - Civics** | | | |
|  | |  | |
| **Writing** | | | |
| 3.1.1 | | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | | Develops ideas and organizes writing | |
| 3.3 | | Knows and applies writing conventions appropriate for the grade level. | |
| **Art** | | | |
|  |  | | |
| **Science Standards** | | | |
| 9-11 LS1C | | Cells contain specialized parts for determining its essential *functions*, such as regulation of cellular activities, energy capture and release, formation of proteins, waste disposal, the *transfer* of information, and movement. | |
| 9-11 LS1E | | The *genetic information* responsible for inherited *characteristics* is encoded in the DNA molecules in *chromosomes*. DNA is composed of four subunits (A,T,C,G). The sequence of subunits in a *gene* specifies the amino acids needed to make a protein. *Proteins* express inherited traits (e.g., eye color, hair texture) and carry out most cell *function*. | |
| 9-11 LS2E | | Interrelationships of *organisms* may *generate ecosystems* that are stable for hundreds or thousands of years. *Biodiversity* refers to the different kinds of *organisms* in specific *ecosystems* or on the planet as a whole. | |
| **Mathematics Standards** | | | |
| A1.8.A | | Analyze a problem situation and represent it mathematically | |
| A1.8.B | | Select and apply strategies to solve problems | |
| A1.8.C | | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  **Work Effectively in Diverse Teams**  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | | |

|  |  |  |
| --- | --- | --- |
| **STANDARDS AND COMPETENCIES** | | |
| **Performance Assessments:** Students will draw, label and describe components of essential structures within cells (cellular membrane, nucleus, chromosome, mitochondrion, and ribosome).  Students will complete a Cell Analogy Project comparing the function of the components of a human composite cell to something else.  Students will describe and model the process of mitosis and meiosis and participate in simulations demonstrating those processes.  Students will participate in simulations to demonstrate knowledge of cellular respiration and protein synthesis and explain the significance of both to the human body.  Students will research one cellular disease and present about the organelles affected and the consequences for the rest of the body.  Students will explain the role of active and passive transport in a cell and their roles in various types of body systems. | | |
| ***STANDARDS AND COMPETENCIES*** | | |
| **C-24 Standard: Processes within Cells.** | | |
| **Competencies C=Core A=Advanced** | | **Total Learning Hours for Unit: 5** |
| C-24.1 | Demonstrate knowledge each part of a cell and its function | |
| C-24.2 | Describe the cell membrane, and the transport processes. | |
| C-24.3 | Describe meiosis and mitosis. | |
|  | Describe structure and function of specialized cells for each of the body systems. | |
| ***EALRs, GLEs, Math and Science Standards (Taught & Assessed in Standards)***  ***(Samples included below of GLEs, EALRS and Standards must be modified for district frameworks)*** | | |
| **Reading** | | |
| **Writing** | | |
| 3.1.1 | Analyzes ideas, selects a manageable topic, and elaborates using specific, relevant details and/or examples. | |
| 3.1 | Develops ideas and organizes writing | |
| 3.3 | Knows and applies writing conventions appropriate for the grade level. | |
| **Science Standards** | | |
| 9-11 LS1C | Cells contain specialized parts for determining its essential *functions*, such as regulation of cellular activities, energy capture and release, formation of proteins, waste disposal, the *transfer* of information, and movement. | |
| 9-11 LS1D | The cell is surrounded by a membrane that separates the interior of the cell from the outside world and determines which substances may enter and which may leave the cell. | |
| 9-11 LS1H | Genes are carried on *chromosomes*. Animal cells contain two copies of each *chromosome* with *genetic information* that regulate body structure and *functions*. Cells divide by a process called *mitosis,* in which the *genetic information* is copied so that each new cell contains exact copies of the original *chromosomes*. | |
| 9-11 LS1I | Egg and sperm cells are formed by a process called *meiosis* in which each resulting cell contains only one representative *chromosome* from each pair found in the original cell. *Recombination* of *genetic information* during *meiosis* scrambles the *genetic information*, allowing for new *genetic* combinations and *characteristics* in the offspring. Fertilization restores the original number of *chromosome* pairs and reshuffles the *genetic information*, allowing for *variation* among offspring. | |
| **Mathematics Standards** | | |
| A1.8.A | Analyze a problem situation and represent it mathematically | |
| A1.8.B | Select and apply strategies to solve problems | |
| A1.8.C | Evaluate a solution for reasonableness, verify its accuracy, and interpret the solution in the context of the original problem A1.8.D Generalize a solution strategy for a single problem to a class of related problems, and apply a strategy for a class of related problems to solve a specific problem. | |
| ***SKILLS*** | | |
| **Make Judgments and Decisions**  2.A.1 Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation  2.C.1 Effectively analyze and evaluate evidence, arguments, claims and beliefs  2.C.2 Analyze and evaluate major alternative points of view  2.C.3 Synthesize and make connections between information and arguments  2.C.4 Interpret information and draw conclusions based on the best analysis  2.C.5 Reflect critically on learning experiences and processes  **Be Responsible to Others**  11.B.1 Act responsibly with the interests of the larger community in mind  **Communicate Clearly**  3.A.1 Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts  3.A.2 Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions  3.A.3 Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)  3.A.4 Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact  3.A.5 Communicate effectively in diverse environments (including multi-lingual)  **Solve Problems**  1.A.1 Use a wide range of idea creation techniques (such as brainstorming)  1.A.2 Create new and worthwhile ideas (both incremental and radical concepts)  1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts  2.D.1 Solve different kinds of non-familiar problems in both conventional andinnovative ways  2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions  **Produce Results**  10.B.1 Demonstrate additional attributes associated with producing high qualityproducts including the abilities to:  10.B.1.a Work positively and ethically  10.B.1.b Manage time and projects effectively  10.B.1.c Multi-task  10.B.1.d Participate actively, as well as be reliable and punctual  10.B.1.e Present oneself professionally and with proper etiquette  10.B.1.f Collaborate and cooperate effectively with teams  10.B.1.g Respect and appreciate team diversity  10.B.1.h Be accountable for results  **Collaborate with Others**  3.B.1 Demonstrate ability to work effectively and respectfully with diverse teams  3.B.2 Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal  3.B.3 Assume shared responsibility for collaborative work, and value the individual contributions made by each team member  **Interact Effectively with Others**  9.A.1 Know when it is appropriate to listen and when to speak  9.A.2 Conduct themselves in a respectable, professional manner  9.B.1 Respect cultural differences and work effectively with people from a range ofsocial and cultural backgrounds  9.B.2 Respond open-mindedly to different ideas and values  9.B.3 Leverage social and cultural differences to create new ideas and increase both innovation and quality of work  **Guide and Lead Others**  11.A.1 Use interpersonal and problem-solving skills to influence and guide others toward a goal  11.A.2 Leverage strengths of others to accomplish a common goal  11.A.3 Inspire others to reach their very best via example and selflessness  11.A.4 Demonstrate integrity and ethical behavior in using influence and power  **Work Creatively with Others**  1.B.1 Develop, implement and communicate new ideas to others effectively  1.B.2 Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work  1.B.3 Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas  1.B.4 View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes  **Manage Projects**  10.A.1 Set and meet goals, even in the face of obstacles and competing pressures  10.A.2 Prioritize, plan and manage work to achieve the intended result  **Access and Evaluate Information**  4.A.1 Access information efficiently (time) and effectively (sources)  4.A.2 Evaluate information critically and competently  4.B.1 Use information accurately and creatively for the issue or problem at hand  4.B.2 Manage the flow of information from a wide variety of sources  4.B.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information  **Use Systems Thinking**  2.B.1 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems  **Apply Technology Effectively**  6.A.1 Use technology as a tool to research, organize, evaluate and communicate information  6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy  6.A.3 Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies  **Be Flexible**  7.B.1 Incorporate feedback effectively  7.B.2 Deal positively with praise, setbacks and criticism  7.B.3 Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments. | | |