ROBBINSVILLE PUBLIC SCHOOLS

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6-12 Science

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Addendum Description

This addendum depicts interdisciplinary connections as listed by standard and suggested example for each unit. These connections are listed for the Science department's course offerings and are arranged by grade level and/or course. Each table denotes the course name as well as the units that are written in the previously approved curricula documents. Any current curriculum document that lists this information by unit within its written template is included via link.

Grade Level/Content		
Grade 6 Science		
Unit	Connected Standard	Example
Unit 1 - Matter	**Math 6.RP.A.3** Use ratio and rate reasoning to solve real-world and mathematical problems (MS-PS1-1)	Students develop scale models of microscopic particles by applying ratio and rate reasoning.
Unit 2 - Energy	**NJSLSA.R8**. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence	Students determine the validity of a claim to draw informed conclusions about content.
Unit 3 - Heat	**Math 6.SP.B.5.B** Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	Students mathematically collect and record data during an experiment.
Unit 4 - Earth Systems	**NJSLS VPA.1.3.D** Performance: All students will synthesize those skills, media, methods, and technologies appropriate to creating, performing, and/or presenting works of art in dance, music, theatre, and visual art.	Students create artistic models to represent differences in earth systems over time.
Unit 5 - Weather	**Math 6.SP.A.1.** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	Students plot trends in data about weather patterns, and predict future outcomes with considerations to statistical variability.

Unit 6 - The Rock Cycle	**NJSLSA.W2.** Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	Students write an outline to demonstrate the characteristics of different types of rocks and what circumstances led to the creation of these characteristics.
Unit 7 - Plate Tectonics	**NJSLS SS 6.1.8.B.1.b** Analyze the world in spatial terms (e.g., longitude, latitude) using historical maps to determine what led to the exploration of new water and land routes.	Students analyze the role plate tectonics played in how the world's regions were formed, and the implications on how land movements affected the history of a people or culture.
Unit 8 - Surface Systems, Weathering & Erosion	**NJSLSA.W7.** Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.	Students research patterns and history of erosion and predict how changes in climate, weather, and human action may have implications on these areas in the future.
Unit 9 - Biosphere	**HPE 2.1.6.A.2** Relate how personal lifestyle habits, environment, and heredity influence growth and development in each life stage.	Students compare the impacts of different living things in the biosphere upon other living things (i.e. through symbiotic relationships, host/parasite relationships, etc)
Grade 7 Science		
Unit	Connected Standard	Example
Unit 1 - Cell Systems & Their Processes	**NJSLSA.SL4.** Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.	Students explore the functions of different cell systems and predict and argue the outcome if one of those systems were compromised or altered.
Unit 2 - Human Body Systems	**NJSLSA.SL1.** Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.	Students participate in a jigsaw activity to learn about the role of different systems in the human body and how they may interact.

Unit 3 - Reproduction and Growth	**HPE 2.4.8.B.1** Analyze the influence of hormones, nutrition, the environment, and heredity on the physical, social, and emotional changes that occur during puberty.	Students observe and analyze the changes over time of the different reproductive systems of humans, plants, and animals.
Unit 4 - Populations, Communities, & Ecosystems	**HPE 2.1.6.B.1** Determine factors that influence food choices and eating patterns.	Students explore how different population groups eat and choose foods based on identifying characteristics.
Unit 5 - Natural Resources and Human Impact on Environment	**NJSLS SS.6.3.8.B.1** Evaluate alternative land use proposals and make recommendations to the appropriate governmental agency regarding the best course of action.	Students work towards creating proposals to lessen human impact on essential environmental resources.
Unit 6 - Waves and Electromagnetic Radiation	**NJSLS VPA 1.1.8.B.2** Compare and contrast the use of structural forms and the manipulation of the elements of music in diverse styles and genres of musical compositions.	Students study waves through their applications in music and how physical and digital manipulation of these systems change sound structures.
Unit 7 - Electricity and Magnetism	**NJSLS Math 7.RP.A.1.** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	Students use mathematical proportional relationships to determine changes in magnetic and electromagnetic force output.
Unit 8 - Information Technology	**WL 7.1.NM.C.1** Use basic information at the word and memorized-phrase level to create a multimedia-rich presentation on targeted themes to be shared virtually with a target language audience.	Students infer the future of presentation and collaboration based on rapid innovations in technology and communication and present this information to an audience of the future.
Grade 8 Science		
Unit	Connected Standard	Example
Unit 1 - Atomic Structure	**NJSLS VPA.1.3.D** Performance: All students will synthesize those skills, media, methods, and technologies appropriate to creating, performing, and/or	When interpreting quantitative data from the periodic table, students build a visual model of atomic structure of various elements.

	presenting works of art in dance, music, theatre, and visual art.	
Unit 2 - Chemical Reactions	**NJSLS Math 8F.B.4** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values	Students mathematically graph chemical reactions and interpret change over time.
Unit 3 - Forces and Motion	**NJSLS Math 8.SP.A.1** Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Students track changes in physical and kinetic energy vs. force over time and measure variables between two quantities.
Unit 4 - Genes & Heredity	**HPE 2.1.8.C.3** Analyze the impact of mental illness (e.g., depression, impulse disorders such as gambling or shopping, eating disorders, and bipolar disorders) on physical, social, and emotional well-being	Students analyze the role genetics plays in mental illness and its impacts on well-being.
Unit 5 - Natural Selection	**HPE 2.1.8.D.1** Assess the degree of risk in a variety of situations and identify strategies to reduce intentional and unintentional injuries to self and others.	Students apply the consequences of risky behaviors of humans to different animal populations over time and how this impacted the process of natural selection.
Unit 6 - History of Earth	**NJSLS SS 6.2.8.D.1.c** Explain how archaeological discoveries are used to develop and enhance understanding of life prior to written records.	Students do a comparative study of notable discoveries with the changes over time in the history of the Earth.
Unit 7 - Energy in the Atmosphere	**NJSLS SS 6.2.8.B.2.a** Determine the extent to which geography influenced settlement, the development of trade networks,	Students analyze how ocean and waterway movement patterns impact how societies are shaped.

	technological innovations, and the sustainability of early river valley civilizations.	
Unit 8 - Climate	**NJSLS SS 6.3.12.B.1** Collaborate with students from other countries to develop possible solutions to an issue of environmental justice, and present those solutions to relevant national and international governmental and/or nongovernmental organizations	Students work globally to identify factors of climate change and work together to propose sustainable solutions.
Unit 9 - Sun-Earth-Moon System	**NJSLS SS 6.3.12.C.1** Participate in a simulated meeting, research evidence from multiple sources about an economic problem, and develop a plan of action	Students discuss the possibility of a new "space race," along with its political and economic implications, and develop a plan of action for what this could look like today.
Unit 10 - Solar System and Beyond	**NJSLSA.W3.** Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Students write critically and creatively about what could exist beyond explored space, based on evidentiary examples from science.
Physics		
Unit	Connected Standard	Example
Unit 1 - About Science	**NJSLS Tech 8.1.12.B.2** Apply previous content knowledge by creating and piloting a digital learning game or tutorial.	Students will be able to create a digital game to navigate the metric system
Unit 2 - Linear Motion and Newton's Laws	**NJSLS HPE 2.5.12.A.2** Analyze application of force and motion (weight transfer, power, speed, agility, range of motion) and modify movement to impact performance.	Students will be able to apply Newton's Laws to stretching practices from physical education
Unit 3 - Conservation	**NJSLS Tech 8.2.12.D.3** Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design,	Students will be able to construct and implement their own device to compete against their peers in an egg drop event to gauge the shift of momentum in protecting the egg

	development and creation of a technological product or system.	
Unit 4 - Rotation & Gravity	**NJSLS Math A.** Create equations that describe numbers or relationships **2**. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales	Students will be able to create and solve equations involving Newton's law of gravitation
Unit 5 - Waves	**NJSLS HPE 2.6.6.A.3** Develop and implement a fitness plan based on the assessment of one's personal fitness level, and monitor health/fitness indicators before, during, and after the program.	Students will be able to monitor their pulse during exercise and rest and apply that data to content learned about waves and wavelengths
Chemistry		
Unit	Connected Standard	Example
Unit 1 - Alchemy: An Introduction to Chemistry	**NJSLS Math A.** Summarize, represent, and interpret data on a single count or measurement variable **1.** Represent data with plots on the real number line (dot plots, histograms, and box plots).	Students will be able to plot data to show that atoms are conserved during a chemical reaction
Unit 2 - A Periodic Puzzle	**NJSLS Tech 8.1.12.B.2** Apply previous content knowledge by creating and piloting a digital learning game or tutorial.	Students will be able to create an interactive quiz game based off of the periodic table
Unit 3 - Inside the Nucleus	**NJSLS VPA 1.3.12.D.2.** Produce an original body of artwork in one or more art mediums that demonstrates mastery of visual literacy, methods, techniques, and cultural understanding.	Students will be able to create a visual depiction of an element of their choosing from the periodic table
Unit 4 - Outside the Nucleus	**NJSLS Math B.** Summarize, represent, and interpret data on two categorical and quantitative variables **6.** Represent data on two	Students will be able to complete equations and plot results showing why fireworks are different colors

	quantitative variables on a scatter plot, and describe how the variables are related. **c.** Fit a linear function for a scatter plot that suggests a linear association.	
Unit 5 - Atomic Bonding	**NJSLS Tech 8.1.12.A.2** Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review.	Students will be able to collaboratively produce a digital document depicting how ionic and covalent bonds are formed
Unit 6 - Molecular Interactions	**NJSLS Math A.** Construct and compare linear and exponential models and solve problems **1**. Distinguish between situations that can be modeled with linear functions and with exponential functions. **b**. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	Students will able to gain practice in unit conversions as they compare the structure of substances at the bulk scale
Unit 7 - Chemical Interactions	**NJSLS Tech 8.1.12.A.3** Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.	Students will be able to collaboratively create a faux social networking site where they work together to balance equations
Unit 8 - Acids & Bases	**NJSLS Tech 8.2.12.D.2** Write a feasibility study of a product to include: economic, market, technical, financial, and management factors, and provide recommendations for implementation.	Students will be able to create an alternative to chlorine in order to maintain health and hygiene in swimming pools
Unit 9 - Energy of Reactions	**NJSLS SS 6.1.12.A.11.d** Analyze the decision to use the atomic bomb and the consequences of doing so.	Students will be able to discuss the difference in reactions and the transfer of energy between the two bombs dropped in Japan during WWII as well as the effect of the decision to use the weapons.
Unit 10 - Reaction Rates & Equilibrium	**NJSLS HPE 2.1.12.A.1** Analyze the role of personal responsibility in maintaining and enhancing	Students will be able to write a report describing the optimal health conditions one needs in

	personal, family, community, and global wellness.	order to be a competitive mountain climber
Biology		
Unit	Connected Standard	Example
Unit 1 - Matter & Energy: Human Activity & Climate	**NJSLS VPA 1.3.12.D.2**. Produce an original body of artwork in one or more art mediums that demonstrates mastery of visual literacy, methods, techniques, and cultural understanding.	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.
Unit 2 - Interdependent Relationships in Ecosystems: Human Activity & Biodiversity	**NJSLS Tech 8.1.12.A.2.** Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review.	Use a computer simulation to model the impact of proposed solutions to a complex real -world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
Unit 3 - DNA & Inheritance	**NJSLS Tech 8.1.12.A.2**. Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review.	Students create a multimedia presentation to discuss the role DNA plays in inheritance, as well as how outside factors (i.e. environmental) affect this.
Unit 4 - Cell Specialization & Homeostasis	**NJSLS HPE 2.3.12.B.1** Compare and contrast the incidence and impact of commonly abused substances (such as tobacco, alcohol, marijuana, inhalants, anabolic steroids, and other drugs) on individuals and communities in the United States and other countries.	Students discuss the impact of drugs and alcohol and how they can affect the body on a cellular level to impact the body's natural homeostasis.
Unit 5 - Natural Selection	**NJSLS HPE 2.3.12.A.1**. Determine the potential risks and benefits of the use of new or experimental medicines and herbal and medicinal supplements	Students analyze potential impacts that modern day medicine has on the process of natural selection.
Unit 6 - Evolution	**NJSLS SS 6.2.12.B.6.a** Determine the global impact of	Students look at causes of evolution throughout history and

	increased population growth, migration, and changes in urban-rural populations on natural resources and land use	apply these concepts to modern day - how will we evolve as a people based on current world conditions?
Environmental Science		
Unit	Connected Standard	Example
Unit 1 - Human Population & Sustainability	**Math HSN.Q.A.2** Define appropriate quantities for the purpose of descriptive modeling.	Students mathematically determine the threshold number of maximum population before adverse effects occur on a system.
Unit 2 - Biosphere, Ecology, & Biodiversity	**Math HSS-IC.A.1** Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	Students discuss and determine how large scale human activities have a disproportionately negative effect on both abiotic and biotic factors of the ecosystem.
Unit 3 - Geosphere, Earth's History, & Geologic Resources	**Math HSS-IC.B.6** Evaluate reports based on data.	Students determine and/or predict future changes of the earth based on data trends.
Unit 4 - Hydrosphere & Water Resources	**NJSLS SS 6.3.12.A.1** Develop a plan for public accountability and transparency in government related to a particular issue	Students look at environmental implications of changing ocean and climate conditions and what this looks like for our future water resources.
Unit 5 - Atmosphere, Air Pollution, & Climate Change	**Math HSN.Q.A.2** Define appropriate quantities for the purpose of descriptive modeling.	Students will discuss the Earth's atmosphere and determine quantities of different gasses comprised therein, which impact the planet's climate.
Anatomy & Physiology		
Please see the following link: https://tinyurl.com/y3qszzeu		
Research in Molecular Biology		
Unit	Connected Standard	Example
Unit 1 - DNA Structure & Function	**NJSLS VPA 1.3.12.D.2.** Produce an original body of artwork in one or more art mediums that	Students use various mediums to construct a model of DNA.

	demonstrates mastery of visual literacy, methods, techniques, and cultural understanding.	
Unit 2 - DNA Replication	**NJ SLS Tech 8.1.12.A.2**. Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review.	Students use multimedia to explain DNA replication.
Unit 3 - Protein Synthesis	**NJSLA Math A-REI.B.3. 3**. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters	Students mathematically measure protein concentrations as they apply to DNA growth and function of cells.
Unit 4 - Gene Regulation	**NJSLS HPE 2.3.12.A.1.** Determine the potential risks and benefits of the use of new or experimental medicines and herbal and medicinal supplements	Students analyze the genetic impact of various traditional and herbal medicines on different types of cancers.
Unit 5 - Biotechnology	**NJSLS SS 6.2.8.B.3.a**. Determine how geography and the availability of natural resources influenced the development of the political, economic, and cultural systems of each of the classical civilizations and provided motivation for expansion.	Students will measure and theorize as to how DNA may be affected by cultural systems in various civilizations.
Unit 6 - Bioethics	**NJSLS SS 6.3.12.A.1**. Develop a plan for public accountability and transparency in government related to a particular issue(s) and share the plan with appropriate government officials.	Students research data and create a plan to inform the public on bioethical controversy.
Unit 7 - Bioinformatics	**NJSLS HPE 2.6.12.A.3**. Determine the role of genetics, gender, age, nutrition, activity level, and exercise type on body composition.	Students will examine genetic markers for various diseases and discuss how biological and environmental factors can contribute to diseases.
Unit 8 - Independent Research	**NJSLS Tech 8.1.12.A.5** Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results.	Students analyze and gather data on a topic of their choice for presentation.

Unit 9 - Infectious Disease	**NJSLS HPE 2.3.12.A.2.** Summarize the criteria for evaluating the effectiveness of a medicine.	Students discuss and show how bacteria affect organisms and how medicine counteracts adverse effects.
Unit 10 - Environmental Biotechnology	**NJSLS SS 6.3.12.B.1** Collaborate with students from other countries to develop possible solutions to an issue of environmental justice, and present those solutions to relevant national and international governmental and/or nongovernmental organizations.	Students work together globally to discuss potential solutions to environmental issues affecting the earth.
Forensics		
Please see the following link: https://tinyurl.com/y3dtkam8		