USING TECHNOLOGY TO STUDY CELLULAR AND MOLECULAR BIOLOGY

Virginia Biology Standards of Learning

Lesson	Standard	Description
2, 3	**BIO.1.b**	Plan and conduct investigations in which hypotheses are formulated based on direct observations and information from scientific literature.
2, 3	**BIO.1.c**	Plan and conduct investigations in which variables are defined and investigations are designed to test hypotheses.
1, 2, 3	**BIO.1.d**	Pan and conduct investigations in which graphing and arithmetic calculations are used as tools in data analysis.
1, 2, 3	**BIO.1.e**	Plan and conduct investigations in which conclusions are formed based on recorded quantitative and qualitative data.
2, 3	**BIO.1.i**	Plan and conduct investigations in which appropriate technology including computers, graphing calculators, and probeware, is used for gathering and analyzing data and communicating results.
3, 4	**BIO.1.j**	Plan and conduct investigations in which research utilizes scientific literature.
3	**BIO.1.k**	Plan and conduct investigations in which differentiation is made between a scientific hypothesis and theory.
1, 2, 3, 4	**BIO.1.l**	Plan and conduct investigations in which alternative scientific explanations and models are recognized and analyzed.
2, 3, 4	**BIO.1.m**	Plan and conduct investigations in which a scientific viewpoint is constructed and defended (the nature of science).
	BIO.2.d	Investigate and understand the history of the development of the structural model of DNA.
3, 4	**BIO.2.e**	Investigate and understand the history of the collaborative efforts of scientists, past and present.
1, 3	**BIO.4.a**	Investigate and understand relationships between cell structure and function including characteristics of prokaryotic and eukaryotic cells.
3	**BIO.5.e**	Investigate and understand life functions of archaebacteria, monerans (eubacteria), protists, fungi, plants, and animals including humans: human health issues, human anatomy, body systems, and life functions.

Virginia English Standards of Learning – Grades 9 & 10

Lesson	Standard	Description
2, 3, 4	**9.4.a**	Identify a position/argument to be confirmed, disproved, or modified.
All activities	**9.4.c**	Synthesize information from sources and apply it in written and oral presentations.
All activities	**9.4.d**	Identify questions not answered by a selected text.
All activities	**9.4.e**	Extend general and specialized vocabulary through speaking, reading, and writing.
All activities	**9.4 .f**	Read and follow instructions to complete an assigned project or task.

2, 3, 4	**9.6.a**	Generate, gather, and organize ideas for writing.
2, 3, 4	**9.6.b**	Plan and organize writing to address a specific audience and purpose.
2, 3, 4	**9.6.c**	Communicate clearly the purpose of the writing.
2, 3, 4	**9.6.d**	Write clear, varied sentences.
2, 3, 4	**9.6.e**	Use specific vocabulary and information.
2, 3, 4	**9.6.f**	Arrange paragraphs into a logical progression.
2, 3, 4	**10.1.a**	Assume responsibility for specific group tasks.
2, 3, 4	**10.1.b**	Participate in the preparation of an outline or summary of the group activity.
2, 3, 4	**10.1.c**	Include all group members in oral presentation.
2, 3, 4	**10.1.d**	Use grammatically correct language, including vocabulary appropriate to the topic, audience, and purpose.
2, 3, 4	**10.10.a**	Use writing to interpret, analyze, and evaluate ideas: explain concepts contained in literature and other disciplines.
2, 3, 4	**10.10.b**	Use writing to interpret, analyze, and evaluate ideas: translate concepts into simpler or more easily understood terms.

Virginia Mathematics Standards of Learning - Secondary

Lesson	Standard	Description
1, 2	**A.5**	Create and use tabular, symbolic, graphical, verbal, and physical representations to analyze a given set of data for the existence of a pattern, determine the domain and range of relations, and identify the relations that are functions.
1, 2	**AII.2**	Add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.
2	**G.12**	Make a model of a three dimensional figure from a two-dimensional drawing and make a two-dimensional representation of a three-dimensional object. Models and representations will include scale drawings, perspective drawings, blueprints, or computer simulations.
1, 2	**G.14.a**	Use proportional reasoning to solve practical problems, given similar geometric objects.
1, 2, 3	**PS.1**	Analyze graphical displays of data, including dotplots, stemplots, and histograms, to identify and describe patterns and departures from patterns, using central tendency, spread, clusters, gaps, and outliers. Appropriate technology will be used to create graphical displays.
2	**PS.8**	Describe the methods of data collection in a census, sample survey, experiment, and observational study and identify an appropriate method of solution for a given problem setting.

3	**PS.12**	The student will identify and describe two or more events as complementary, dependent, independent, and/or mutually exclusive.
Virginia Health Standards of Learning – Grades 9 & 10		
Lesson	**Standard**	**Description**
3, 4	**9.4.b**	Use various sources of information to evaluate global health issues including the benefits of information provided by recognized sources such as state and local health departments, the Food and Drug Administration (FDA), the National Institutes of Health (NIH), the World Health Organization (WHO), and the Centers for Disease Control and Prevention (CDC).
3, 4	**10.4.d**	Synthesize and evaluate available health information, products, and services for the value and potential impact on his/her well-being throughout life including the impact of technology on the health status of individuals, families, communities, and the world.