Description of I AM Blueprints
Grade 10 Biology
(Beginning 2019-20 School Year)

Reporting Category	Content Connector (CC)	Content Connector	CC Item Min	CC Item Max
Analyzing Data and Mathematical Thinking	B.3.1.a.1	Explain how given resources (energy, water, oxygen, and minerals) place limits on an ecosystem's population.	1	2
	B.3.2.a.1	Demonstrate how human activities and natural phenomena can change the flow of matter and energy in an ecosystem.	0	2
	B.3.2.a.2	Identify how human activities and natural phenomena impact the environment and biodiversity of populations in ecosystems.	1	2
	B.3.2.a.3	Describe how human impact on ecosystems can be reduced.	1	2
	B.4.1.a.1	Describe how DNA and chromosomes influence traits passed from parents to offspring	1	2
	SEPS.3	Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	0	2

	SEPS.4	Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: “Does this make sense?” "Could my results be duplicated?" and/or “Does the design solve the problem with the given constraints?”	1	2
	SEPS.5	In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	0	3
Communicating Explanations and Evaluating Claims Using Evidence	B.5.1.a.1	Describe how organisms are named and classified (e.g., taxonomic categories based on evolutionary relationships).	0	2
	B.5.4.a.1	Explain the role of natural selection in adaptation of species.	1	2
	B.5.4.a.2	Describe how environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and/or (3) the extinction of other species.	0	2
	B.5.5.a.1	Describe the four primary factors affecting evolution: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	0	3

	SEPS.1	A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	1	2
	SEPS.6	Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	0	2
	SEPS.7	Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	0	3
	SEPS.8	Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	0	2
Developing and Using Modeling	B.1.1.a.1	Compare and contrast the shape and function of the essential biological macromolecules (i.e., carbohydrates, lipids, proteins, and nucleic acids).	0	1

to Describe Structure and Function	B.1.1.a.2	Describe how chemical elements (i.e., carbon, hydrogen, oxygen, nitrogen, phosphorus, and sulfur) can combine to form biomolecules (i.e., carbohydrates, lipids, proteins, and nucleic acids).	0	1
	B.1.3.a.1	Refer to a model to explain how a cell membrane functions.	0	2
	B.1.4.a.1	Use a model to describe the specialized structures within cells (i.e. nuclei, ribosomes, Golgi, endoplasmic reticulum).	1	2
	B.1.5.a.1	Use a model to describe the organization of interacting systems (cell, tissue, organ, organ system) that provide specific functions within multicellular organisms.	1	2
	B.2.2.a.1	Use a model to describe how cellular respiration results in a net transfer of energy.	0	2
	B.2.3.a.1	Use visual representations to demonstrate the cycling of matter and flow of energy among organisms in an ecosystem.	1	2
	B.2.4.a.1	Describe the role of photosynthesis and cellular respiration in the carbon cycle.	0	2
	B.4.2.a.1	Explain how the structure of DNA determines the structure of proteins that carry out essential functions of life through systems of specialized cells.	0	1
	B.4.3.a.1	Model the primary structure of protein as determined by the sequence of its amino acids and DNA codes.	0	1
	B.4.4.a.1	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	0	2

	SEPS.2	A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models. Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	1	2

Link to IDOE's I AM Blueprint

Total High Priority (Purple): 11
Total Medium Priority (Blue): 13
Total Lesser Priority (Gray): 4