

Course: Life Sciences 11

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Course Description:

Life Sciences 11 focuses on ecology and evolution. Students will investigate the diversity of life by studying the molecular biochemistry that unifies life and the characteristics that separates life into its different phylum's. Through inquiry and engagement in hands on activities, students will discover how members of the Archaea, Bacteria, and Eukarya domains have fundamental molecular similarities and will explore the necessary evolutionary mechanisms that have allowed life to evolve and become so diverse. Refer to the New Curriculum on the MOE site: <https://curriculum.gov.bc.ca/>

Summer Learning Beliefs:

Summer Learning provides an engaging learning environment where all students can challenge themselves academically and fulfill their learning goals. To ensure this, students will:

- abide by the student Code of Conduct
- adhere to the Academic Honesty Policy
- adhere to the Summer Learning Student Engagement policy
- respect themselves and others
- attend every class and be punctual
- inquire, think, and engage to the best of their ability
- access technology in class when instructed to do so and for learning purposes only
- challenge themselves and have fun learning

All Summer Learning policies can be accessed at: <https://www.sd44.ca/school/summer/policies/Pages/default>

Course Syllabus:

| Unit | Essential Questions | Content | Curricular Competencies | Assessment Task |
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| Unit 1: Cells Big Idea: Life is a result of interactions at the molecular and cellular level | What debates are ongoing with the terms "living" and "non-living"? What cellular processes allow organisms to live on land? | <ul style="list-style-type: none">• Levels of Organization• Cell structure and function• Sexual and asexual reproduction• Energy transformations in cells• Viruses | <ul style="list-style-type: none">• Questioning and Predicting• Planning and Conducting• Processing and Analyzing Data and Information• Evaluating• Applying and Innovating• Communicating | Learning evidence Includes note taking, quizzes, reading and analyzing articles, compilation of resources, writing report drafts, and creating physical and online media. Students will be able to make their own bacteria cultures and understand how |

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| | | | | those cultures respond to external factors. |
| <p>Unit 2: Evolution</p> <p>Big Idea: Evolution occurs at the population level</p> | <p>What is the role of DNA in evolution and biodiversity?</p> <p>What factors might influence speciation in your local environment?</p> | <ul style="list-style-type: none"> • First Peoples understandings of interrelationships between organisms • Microevolution • Macroevolution • Artificial selection and genetic modifications | <ul style="list-style-type: none"> • Questioning and Predicting • Planning and Conducting • Processing and Analyzing Data and Information • Evaluating • Applying and Innovating • Communicating | <p>Learning evidence Includes note taking, quizzes, reading and analyzing articles, compilation of resources, writing report drafts, and creating physical and online media. Students will understand the processes of microevolution and macroevolution and will consider the ethical implications of GMOs in an inquiry project.</p> |
| <p>Unit 3: Taxonomy and Classification</p> <p>Big Idea: Organisms are grouped based on common characteristics</p> | <p>How is DNA analysis used to demonstrate the relatedness of species?</p> <p>How convincing is morphology in providing evidence for relatedness?</p> <p>Why do two organisms compete to coexist in the same niche?</p> | <ul style="list-style-type: none"> • Single-celled and multi-celled organisms • Trends in complexity among various life forms • Evidence for phylogenetic relationships • Taxonomic principles for classifying organisms • Binomial nomenclature • First Peoples knowledge on classification • Similarities and differences between domains and kingdoms | <ul style="list-style-type: none"> • Questioning and Predicting • Planning and Conducting • Processing and Analyzing Data and Information • Evaluating • Applying and Innovating • Communicating | <p>Learning evidence includes note taking, quizzes, reading and analyzing articles, compilation of resources, writing report drafts, and creating physical and online media. Students will know how to dissect various organisms and be able to identify characteristics that make those organisms unique.</p> |

Grade Descriptors:

“A” quality evidence of learning....

Produces high-quality, frequently innovative work. Communicate scientific ideas to connect and synthesize concepts and skills learned over time. Consistently demonstrate sophisticated critical and creative thinking. Collect, present, and correctly transform experimental data. Interprets, analyzes and critiques scientific findings and experimental data. Frequently transfers and extends knowledge and skills and use concepts to solve non-routine, real-world problems, displaying initiative and expertise in their approach. Virtually no support is needed. Mistakes made are not reflective of gaps or deficiencies in mastery.

“B” quality evidence of learning....

Sometimes produces high-quality, innovative work. Communicate scientific ideas to compare and critique concepts and skills learned over time. Consistently demonstrate a degree of critical and creative thinking. Collect and present scientific data in an appropriate manner. Assess, interpret, and revise scientific findings and experimental data. Transfers knowledge and skills and use concepts to consistently solve routine, real-world problems correctly with minimal guidance and occasional periods of greater support, with some mistakes that are sometimes indicative of gaps in mastery.

“C” quality evidence of learning....

Produces work of an acceptable and inconsistent quality. Communicates a basic understanding of scientific concepts and operates superficially within a scientific contextual framework. Displays an emergent level of application when it comes to critical thinking skills. Collect scientific data in an appropriate manner. Is inflexible in the use of knowledge and skills, requiring moderate to high levels of support even in familiar classroom situations. Make attempts to use knowledge, skills and scientific concepts to solve routine, real-world problems, with frequent mistakes indicative of gaps in mastery.

Resources:

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| Resources |
| All materials will be provided for students in class. |
| Students will need access to a computer and internet connection for research purposes. |

We would like to thank the Coast Salish people, specifically the Skwxwú7mesh Nation and Tsleil-Waututh Nation, on whose unceded traditional territory the North Vancouver School District resides. We value the opportunity to learn, share and grow on this traditional territory.

