



## Thames Valley District School Board

### London Central Secondary School Course Outline 2019/2020



<b>Course Name:</b> Biology, Grade 11	<b>Course Code:</b> SBI 3U	<b>Course Pre-requisite:</b> SNC 2D
<b>Course Type:</b> University Preparation	<b>Grade Level:</b> 11	<b>Credit Value:</b> 1
<b>Textbook:</b> Biology 11U	<b>Publisher:</b> Nelson	<b>Textbook Value:</b> \$ 106.92
<b>Teachers:</b> B. Coward, P. Pigeon and K. Wiener		

#### Course Description:

This course furthers students' understanding of the processes that occur in biological systems. Students will study theory and conduct investigations in the areas of biodiversity; evolution; genetic processes; the structure and function of animals; and the anatomy, growth, and function of plants. The course focuses on the theoretical aspects of the topics under study, and helps students refine skills related to scientific investigation.

**Link 11-12 Science - [http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11\\_12.pdf](http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11_12.pdf)**

#### Course Overall Expectations:

Strand	Overall Expectations
	<b>As a component of every strand:</b>
Scientific Investigation Skills and Career Exploration	<ul style="list-style-type: none"> <li>● demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, analysing and interpreting, and communicating);</li> <li>● identify and describe a variety of careers related to the fields of science under study, and identify scientists, including Canadians, who have made contributions to those fields.</li> </ul>
Diversity of Living Things	<ul style="list-style-type: none"> <li>● analyse the effects of various human activities on the diversity of living things;</li> <li>● investigate, through laboratory and/or field activities or through simulations, the principles of scientific classification, using appropriate sampling and classification techniques;</li> <li>● demonstrate an understanding of the diversity of living organisms in terms of the principles of taxonomy and phylogeny.</li> </ul>
Evolution	<ul style="list-style-type: none"> <li>● analyse the economic and environmental advantages and disadvantages of an artificial selection technology, and evaluate the impact of environmental changes on natural selection and endangered species;</li> <li>● investigate evolutionary processes, and analyse scientific evidence that supports the theory of evolution;</li> <li>● demonstrate an understanding of the theory of evolution, the evidence that supports it, and some of the mechanisms by which it occurs.</li> </ul>
Genetic Processes	<ul style="list-style-type: none"> <li>● evaluate the importance of some recent contributions to our knowledge of genetic processes, and analyse social and ethical implications of genetic and genomic research;</li> <li>● investigate genetic processes, including those that occur during meiosis, and analyse data to solve basic genetics problems involving monohybrid and dihybrid crosses;</li> <li>● demonstrate an understanding of concepts, processes, and technologies related to the transmission of hereditary characteristics.</li> </ul>
Animals: Structure and Function	<ul style="list-style-type: none"> <li>● analyse the relationships between changing societal needs, technological advances, and our understanding of internal systems of humans;</li> <li>● investigate, through laboratory inquiry or computer simulation, the functional responses of the respiratory and circulatory systems of animals, and the relationships between their respiratory, circulatory, and digestive systems;</li> <li>● demonstrate an understanding of animal anatomy and physiology, and describe disorders of the respiratory, circulatory, and digestive systems.</li> </ul>
Plants: Anatomy, Growth, and Function	<ul style="list-style-type: none"> <li>● evaluate the importance of sustainable use of plants to Canadian society and other cultures;</li> <li>● investigate the structures and functions of plant tissues, and factors affecting plant growth;</li> <li>● demonstrate an understanding of the diversity of vascular plants, including their structures, internal transport systems, and their role in maintaining biodiversity.</li> </ul>

## Assessment and Evaluation Strategies:

The purpose of assessment and evaluation is to improve student learning. Assessment and evaluation is based on the provincial curriculum expectations and the achievement levels outlined in the curriculum document. In order to ensure that assessment and evaluation are valid and reliable, and that they lead to the improvement of student learning, teachers use a variety of strategies throughout the course, including: providing students with feedback about their work (known as assessment for learning), helping to set learning goals and monitor their own progress (known as assessment as learning), and evaluation and reporting of progress in the form of grades and marks (known as assessment of learning).

<p style="text-align: center;"><b>Unit Overview</b></p> <p style="text-align: center;">Students will work with related scientific investigation skills and explore scientific careers as part of each unit.</p>	<p style="text-align: center;"><b>Assessment and Evaluation Methods</b></p> <p style="text-align: center;">(May include major evaluations)</p>
<p>Diversity of Living Things Topics</p> <ul style="list-style-type: none"> <li>principles of taxonomy and phylogeny; structure/function of types of prokaryotes, eukaryotes, and viruses; characteristics of representative organisms from each kingdom; classification of organisms; key structural/functional evolutionary changes; importance of biodiversity and; human intervention/impact and environmental factors affecting biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>assignments, debates, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<p>Evolution Topics</p> <ul style="list-style-type: none"> <li>evolution theory and mechanisms, contributions of various scientists to modern theories of evolution, key factors affecting evolutionary processes, adaptation, speciation, extinction, artificial selection and impact of environmental change on natural selection</li> </ul>	<ul style="list-style-type: none"> <li>assignments, debates, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<p>Genetic Processes Topics</p> <ul style="list-style-type: none"> <li>process/phases/events of meiosis; concepts of DNA, genes, chromosomes, alleles, mitosis, genotype, phenotype, dominance, incomplete dominance, codominance, recessiveness, and sex linkage; Mendelian laws of inheritance; calculate the outcomes of monohybrid and dihybrid crosses; genetic disorders; genetic/reproductive techniques/technologies and social/ethical implications of research in genetics and genomics</li> </ul>	<ul style="list-style-type: none"> <li>assignments, debates, exam group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<p>Animals: Structure and Function Topics</p> <ul style="list-style-type: none"> <li>anatomy and physiology of the respiratory system, the digestive system and the circulatory system; relationships between the respiratory, circulatory, and digestive systems of a representative animal; response of the respiratory and circulatory systems to external stimuli; disorders related to the respiratory, digestive, and circulatory systems and the relationship between societal needs and scientific/technological developments related to internal systems</li> </ul>	<ul style="list-style-type: none"> <li>assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<p>Plants: Anatomy, Growth, and Function Topics</p> <ul style="list-style-type: none"> <li>structure and physiology of vascular plant tissues; structure and evolutionary processes of monocot and dicot plants; reproductive mechanisms of plants, artificial propagation; factors affecting plant growth; ecological succession; role of plants in maintaining biodiversity, environmental sustainability and ecosystem repair; importance of plants to the growth and development of Canadian society and use of plants by different societies/cultures</li> </ul>	<ul style="list-style-type: none"> <li>assignments, debates, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<p><b>Course Culminating Activity/Independent Study</b></p> <ul style="list-style-type: none"> <li>Analysis of The Interactions Amongst the Diversity, Evolution, Systems and Genetics Strands via Case Studies and/or Presentations and/or Investigations</li> </ul>	<ul style="list-style-type: none"> <li>at the conclusion of all the required strands</li> </ul>
<p><b>Exam</b></p>	<ul style="list-style-type: none"> <li>written exam in January</li> </ul>

## Assessment and Evaluation Categories and Weights:

Achievement Chart Categories	
Term Achievement Category	Comprises
Application/Making Connections	<ul style="list-style-type: none"> <li>● transfer of concepts between self and science</li> <li>● transfer of concepts between science and other subjects</li> <li>● transfer of concepts between subjects and the world outside</li> <li>● access impacts of science</li> </ul>
Communication	<ul style="list-style-type: none"> <li>● oral, writing, listening and visual skills</li> <li>● mathematical/data communication, presentation and precision/accuracy</li> <li>● journals, portfolios and models</li> </ul>
Knowledge/Understanding	<ul style="list-style-type: none"> <li>● facts, terms and relationships between concepts</li> <li>● transfer of concepts to new contexts</li> <li>● solving math/formula problems</li> </ul>
Thinking/Inquiry	<ul style="list-style-type: none"> <li>● design skills (formulate hypotheses, create and test procedures)</li> <li>● thinking skills (inductive reasoning, deductive reasoning and data analysis, interpretation and evaluation)</li> </ul>

Evaluation/Weight of Marks			
Evaluation	Components	Component Percentage	Overall Percentage
Term Evaluation	Application/Making Connections	25	<b>70</b>
	Communication	25	
	Knowledge/Understanding	25	
	Thinking/Inquiry	25	
Final Evaluation	Culminating Activity	10	<b>30</b>
	Exam	20	

## Learning Skills and Work Habits Assessment:

The development of learning skills and work habits is an integral part of student learning. These skills are:

- Responsibility
- Organization
- Independent Work
- Collaboration
- Initiative
- Self-Regulation

Learning skills and work habits influence student achievement and are included as a formal part of the assessment and evaluation process. Learning skills and work habits will be assessed through a variety of teacher strategies. ( e.g. observation, student /teacher conference, self-reflection, checklists, exit cards, etc.) These important learning skills and work habits will be formally reported on the Provincial Report Card according to the following scale: E- Excellent, G- Good, S- Satisfactory, N- Needs Improvement.

## Academic Dishonesty - Cheating and Plagiarism:

Learning tasks that students complete as well as the assignments, tests and exams that students submit for evaluation must be their own work. Cheating and plagiarism is a serious offence that will not be condoned. Academic consequences will result.

## Late and Missed Assignments - Student Roles and Responsibilities - Students are expected to:

- be responsible for providing evidence of their achievement of the overall expectations within the time frame specified by the teacher, and in a form approved by the teacher;
- understand that there will be consequences for not completing assignments for evaluation and/or for submitting those assignments late;
- use class time productively;
- in extenuating circumstances, request an extension from the teacher before the due date.

Mark deductions for late and missed assignments may apply to **major assignments only**.

**References:** *TVDSB Assessment & Evaluation Policy, September 2011; Growing Success - Assessment and Evaluation, and Reporting in Ontario Schools, 2010. Student Planner and School Web site*