



## 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 3C	<b>Course Pre-requisite:</b> SNC 2D/P
<b>Course Type:</b> College 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		

#### Course Description:

This course focuses on the processes that occur in biological systems. Students will learn concepts and theories as they conduct investigations in the areas of cellular biology, microbiology, genetics, the anatomy of mammals, and the structure of plants and their role in the natural environment. Emphasis will be placed on the practical application of concepts, and on the skills needed for further study in various branches of the life sciences and related fields.

**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
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>
Cellular Biology	<ul style="list-style-type: none"> <li>● evaluate the impact of environmental factors and medical technologies on certain cellular processes that occur in the human body;</li> <li>● investigate the structures and functions of cells, and the factors that influence cellular activity, using appropriate laboratory equipment and techniques;</li> <li>● demonstrate an understanding of the basic processes of cellular biology.</li> </ul>
Microbiology	<ul style="list-style-type: none"> <li>● assess the effects of microorganisms in the environment, and analyse ethical issues related to their use in biotechnology;</li> <li>● investigate the development and physical characteristics of microorganisms, using appropriate laboratory equipment and techniques;</li> <li>● demonstrate an understanding of the diversity of microorganisms and the relationships that exist between them.</li> </ul>
Genetics	<ul style="list-style-type: none"> <li>● evaluate some social, ethical, and environmental implications of genetic research and related technologies;</li> <li>● investigate the process of meiosis, and analyse data related to the laws of heredity;</li> <li>● demonstrate an understanding of the process of meiosis, and explain the role of genes in the transmission of hereditary characteristics.</li> </ul>
Anatomy of Mammals	<ul style="list-style-type: none"> <li>● analyse the social or economic impact of a technology used to treat systems in the human body, and the impact of lifestyle choices on human health;</li> <li>● investigate, through laboratory inquiry or computer simulation, the anatomy, physiology, and response mechanisms of mammals;</li> <li>● demonstrate an understanding of the structure, function, and interactions of the circulatory, digestive, and respiratory systems of mammals.</li> </ul>
Plants in the Natural Environment	<ul style="list-style-type: none"> <li>● analyse the roles of plants in ecosystems, and assess the impact of human activities on the balance of plants within those ecosystems;</li> <li>● investigate some of the factors that affect plant growth;</li> <li>● demonstrate an understanding of the structure and physiology of plants and their role in the natural environment.</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>Cellular Biology Topics</p> <ul style="list-style-type: none"> <li>structures and functions of important biochemical compounds, biological tests to identify biochemical compounds in food, qualitative factors on the action of enzymes, the roles of organelles, microscopic identification of animal and plant cell organelles, drawing labelled microscope diagrams including proper magnification, cellular respiration, qualitative factors affecting diffusion rates across a plasma membrane, importance of cellular processes in human systems, effectiveness of medical devices and technologies used to aid cellular functions/processes and effects of environmental factors on human cellular processes</li> </ul>	<ul style="list-style-type: none"> <li>assignments, debates, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<p>Microbiology Topics</p> <ul style="list-style-type: none"> <li>anatomy and morphology of groups of microorganisms; aseptic laboratory culture of microorganisms; effect of antibacterial agents on bacterial cultures; cell division of eukaryotic and prokaryotic microorganisms; conditions needed for microbial growth; symbiotic relationships of microorganisms with other organisms; reproduction methods of types of bacteria, viruses, and fungi; impact, treatment and prevention of host infection by viruses, bacteria, and fungi; beneficial and harmful impact of microorganisms in the environment and ethical issues related to the use of microorganisms in biotechnology</li> </ul>	<ul style="list-style-type: none"> <li>assignments, debates, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<p>Genetics Topics</p> <ul style="list-style-type: none"> <li>process/phases/events of meiosis; concepts of DNA, genes, chromosomes, alleles, mitosis, genotype, phenotype, dominance, recessiveness, and sex linkage; transmission of hereditary characteristics; calculate the outcomes of monohybrid crosses and communicate the results; genetic disorders; reproductive technics/technologies; social/ethical implications of research in genetics and reproductive technologies; and effects of genetic research and biotechnology on the environment</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>Anatomy of Mammals Topics</p> <ul style="list-style-type: none"> <li>anatomy and physiology of the circulatory system, the respiratory system and the digestive system; function of the kidneys; interactions between a mammal's different body systems; response of the respiratory and circulatory systems to external stimuli; social/economic impact of medical technology to treat human systems and impacts of lifestyle choices on human health/body 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 in the Natural Environment Topics</p> <ul style="list-style-type: none"> <li>structure and physiology of plant tissues, process of photosynthesis, reproductive mechanisms of plants, artificial propagation, factors affecting plant growth, plant adaptations and variation, role of plants in maintaining biodiversity and environmental sustainability, and human impacts on the natural balance of plants</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	
Achievement Category	Percentage
Application/Making Connections	25
Communication	25
Knowledge/Understanding	25
Thinking/Inquiry	25

Evaluation/Weight of Marks	
Evaluation	Percentage
Term Evaluation	70
Final Evaluation:	30
• Culminating Activity	10
• 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*