

Thames Valley District School Board



London Central Secondary School Course Outline 2019/2020



Course Name: Science, Grade 10	Course Code: SNC 2DE	Course Pre-requisite: SNC1D/IP
Course Type: Academic, Enriched	Grade Level: 10	Credit Value: 1
Textbook: Science Perspectives 10	Publisher: Nelson	Textbook Value: \$ 91.94
Teachers: P. Webb		

Course Description:

This course enables students to enhance their understanding of concepts in biology, chemistry, earth and space science, and physics, and of the interrelationships between science, technology, society, and the environment. Students are also given opportunities to further develop their scientific investigation skills. Students will plan and conduct investigations and develop their understanding of scientific theories related to ecology and the maintenance of ecosystems; chemical reactions, with a particular focus on acid–base reactions; forces that affect climate and climate change; and the interaction of light and matter. The focus will be on problem-based and inquiry-based learning. Students will be asked to study real-world issues in-depth using inductive and deductive thinking to pose scientific questions and develop inferences from their personalized observations/research.

Link 9-10 Science - http://www.edu.gov.on.ca/eng/curriculum/secondary/science910_2008.pdf

Course Overall Expectations:	
Strand	Overall Expectations
Scientific Investigation Skills and Career Exploration	<p>As a component of every strand:</p> <ul style="list-style-type: none"> 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); 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.
Biology: Tissues, Organs, and Systems of Living Things	<ul style="list-style-type: none"> evaluate the importance of medical and other technological developments related to systems biology, and analyse their societal and ethical implications; investigate cell division, cell specialization, organs, and systems in animals and plants, using research and inquiry skills, including various laboratory techniques; demonstrate an understanding of the hierarchical organization of cells, from tissues, to organs, to systems in animals and plants.
Chemistry: Chemical Reactions	<ul style="list-style-type: none"> analyse a variety of safety and environmental issues associated with chemical reactions, including the ways in which chemical reactions can be applied to address environmental challenges; investigate, through inquiry, the characteristics of chemical reactions; demonstrate an understanding of the general principles of chemical reactions, and various ways to represent them.
Earth and Space Science: Climate Change	<ul style="list-style-type: none"> analyse some of the effects of climate change around the world, and assess the effectiveness of initiatives that attempt to address the issue of climate change; investigate various natural and human factors that influence Earth's climate and climate change; demonstrate an understanding of natural and human factors, including the greenhouse effect, that influence Earth's climate and contribute to climate change.
Physics: Light and Geometric Optics	<ul style="list-style-type: none"> evaluate the effectiveness of technological devices and procedures designed to make use of light, and assess their social benefits; investigate, through inquiry, the properties of light, and predict its behaviour, particularly with respect to reflection in plane and curved mirrors and refraction in converging lenses; demonstrate an understanding of various characteristics and properties of light, particularly with respect to reflection in mirrors and reflection and refraction in lenses

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;">Unit Overview</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;">Assessment and Evaluation Methods</p> <p style="text-align: center;">(May include major evaluations)</p>
<p>Biology: Tissues, Organs, and Systems of Living Things Topics</p> <ul style="list-style-type: none"> cell cycle; microscope examination and drawing animal and plant cells; importance/function of mitosis; microscopic identification of animal and plant mitotic stages; importance of cell division/specialization; microscopic identification and drawing human or plant cell types; cell division rates; links between specialized cells, tissues, organs, and systems in plants and animals; primary functions of animal systems; interaction of different systems; interrelationship amongst organ systems within a plant, worm, frog or fish; diseases of human or plant tissues, organs or organ systems and technological/medical development in biology 	<ul style="list-style-type: none"> assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests Major Evaluation: Biology Tissue, Organs and Systems Learning/Resource Guide
<p>Chemistry: Chemical Reactions Topics</p> <ul style="list-style-type: none"> evidence of chemical change; relationships between chemical formulae, composition, and names of binary compounds; the rationale for balancing chemical equations; write word and balanced chemical equations for simple chemical reactions; describe/identify reactants and products of a variety of types of chemical reactions and their properties; acid–base neutralization, use of the pH scale; identification of and writing formulas for simple compounds; and safety and environmental issues/benefits of chemical reactions 	<ul style="list-style-type: none"> assignments, debates, exam, group work, laboratory investigations, projects, quizzes, reports and tests Major Evaluations: Chemical Reaction Inquiry Investigation/Performance Task
<p>Earth and Space Science: Climate Change Topics</p> <ul style="list-style-type: none"> Earth’s climate system; compare/classify climate regions; heat transfer in the hydrosphere and atmosphere; natural and anthropogenic greenhouse effect; natural and human activities affecting climate; Canada’s contribution to climate change; principal natural and anthropogenic sources/sinks of greenhouse gases; influence of compounds in trapping heat in the atmosphere/hydrosphere; depletion of stratospheric and tropospheric ozone; formation of ground-level ozone and smog; indicators, impact and initiatives to deal with global climate change and different perspectives/biases associated with climate change 	<ul style="list-style-type: none"> exam Major Evaluations: Climate Change Inquiry Investigation/Performance Task and Climate Change Project
<p>Physics: Light and Geometric Optics Topics</p> <ul style="list-style-type: none"> electromagnetic spectrum, types of light emissions, laws of reflection, characteristics of images formed by plane/curved mirrors using labelled ray diagrams and algebraic equations, partial reflection/refraction and total internal reflection in lenses, characteristics of images formed by converging lenses using labelled ray diagrams and algebraic equations, uses of mirrors/lenses, qualitative/quantitative factors affecting refraction of light; calculation of indices of refraction, velocity of light and angles of refraction for a variety of media, use properties of light to explain optical phenomena; analysis of technological devices/procedures related to light perception 	<ul style="list-style-type: none"> assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests Major Evaluation: Optics Performance Task and Diagrams
<p>Course Culminating Activity/Independent Study</p> <ul style="list-style-type: none"> Scientific Study/Application/Investigation Project 	<ul style="list-style-type: none"> due in March
<p>Exam</p>	<ul style="list-style-type: none"> written exam in June

Assessment and Evaluation Categories and Weights:

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

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