



# Human Physiology 110

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# 1. Introduction

## 1.1 Mission and Vision of the Educational System

The New Brunswick Department of Education and Early Childhood Development is dedicated to providing the best public education system possible, where all students have a chance to achieve their academic best. The mission statement for New Brunswick schools is:

*“To have each student develop the attributes needed to be a lifelong learner, to achieve personal fulfillment and to contribute to a productive, just and democratic society.”*

## 1.2 Atlantic Canada Essential Graduation Competencies

(Atlantic Provinces Education Foundation DRAFT 2015)

Essential Graduation Competencies provide a consistent vision for the development of a coherent and relevant curriculum. The Essential Graduation Learnings statements offer students clear goals and a powerful rationale for school work. They help ensure that provincial education systems’ missions are met by design and intention. The Essential Graduation Learnings statements are supported by curriculum outcomes.

Essential Graduation Competencies are statements describing the knowledge, skills and attitudes expected of all students who graduate high school. Achievement of the Essential Graduation Competencies prepares students to continue to learn throughout their lives. These Learnings describe expectations not in terms of individual school subjects but in terms of knowledge, skills and attitudes developed throughout the curriculum. They confirm that students need to make connections and develop abilities across subject boundaries if they are to be ready to meet the shifting and ongoing demands of life, work and study today and in the future.

<b>Creativity and Innovation</b>	<i>Learners are expected to engage in creative processes, to make unforeseen connections, and to generate new and dynamic ideas, techniques and products. They value aesthetic expression and appreciate the creative and innovative works of others.</i>
<b>Citizenship</b>	<i>Learners are expected to act responsibly and contribute positively to the quality and sustainability of their environment, communities and society. They assess the social, cultural, economic and environmental interconnectedness and act as stewards in a local, national and global context.</i>
<b>Communication</b>	<i>Learners are expected to express themselves effectively through a variety of media. They listen, view and read for information and enjoyment.</i>
<b>Personal and Career Development</b>	<i>Learners are expected to become self-aware and self-directed individuals who set goals, make thoughtful decision regarding learning, health and wellness, and career pathways, and take responsibility for pursuing their goals throughout life.</i>
<b>Critical Thinking</b>	<i>Learners are expected to analyze and evaluate ideas using various types of reasoning and systems thinking to inquire, make decisions, and solve problems. They reflect critically on thinking processes.</i>
<b>Technology Fluency</b>	<i>Learners are expected to use and apply technology to collaborate, communicate, create, innovate, and solve problems. They use technology in a legal, safe, and ethically responsible manner to support and enhance learning and career and personal goals.</i>

## 2. Pedagogical Guidelines

### 2.1 Diverse Cultural Perspectives

It is important for teachers to recognize and honour the variety of cultures and experiences from which students are approaching their education and the world. It is also important for teachers to recognize their own biases and be careful not to assume levels of physical, social or academic competencies based on gender, culture, or socio-economic status.

Each student's culture will be unique, influenced by their community and family values, beliefs, and ways of viewing the world. Traditional indigenous culture may view the world in a more holistic way than the dominant culture, connecting disciplines and learning through active participation, oral communication and experiences. Immigrant students may also be a source of alternate experiences, world views and cultural understandings. Cultural variation may also arise from the differences between urban, rural and isolated communities. It may also arise from the different value that families may place on academics or athletics, books or media, theoretical or practical skills, or on community and church. Providing a variety of teaching and assessment strategies to build on this diversity will provide an opportunity to enrich learning experiences for all students.

### 2.2 Universal Design for Learning

Universal Design for Learning is a “framework for guiding educational practice that provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged. It also “...reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient.” (CAST, 2011).

In an effort to build on the established practice of differentiation in education, the Department of Education and Early Childhood Development supports *Universal Design for Learning* for all students. New Brunswick curricula are created with universal design for learning principles in mind. Outcomes are written so that students may access and represent their learning in a variety of ways, through a variety of modes. Three tenets of universal design inform the design of this curriculum. Teachers are encouraged to follow these principles as they plan and evaluate learning experiences for their students:

- **Multiple means of representation:** provide diverse learners options for acquiring information and knowledge
- **Multiple means of action and expression:** provide learners options for demonstrating what they know
- **Multiple means of engagement:** tap into learners' interests, offer appropriate challenges, and increase motivation

For further information on *Universal Design for Learning*, view online information at the [CAST website](#), or download the [UDL reference handout](#).

UDL is neither curriculum nor a checklist. If it were either one of those things, it would oversimplify the act and professionalism of teaching. As an educator, you have taken courses in pedagogy, classroom management, and theory. You have a collection of tools, resources, and strategies you have learned recently or over the years. The structure of UDL guides you to actively, attentively, and purposely pull from that collection. It also asks you to possibly think differently. The Difference: Because UDL is a framework versus a curriculum, teachers are in full control in designing the learning environment and lessons (p. 4, *Design and Deliver*).

Loui Lord Nelson (*Design and Deliver: Planning and Teaching Using Universal Design for Learning* 1st Edition, 2014 Paul H. Brooks Publishing) suggests the following reflective questions to support planning (p. 134):

*When I plan my lessons do I:*

- *Have a clear goal?*
- *Know how I am going to measure whether students have met the goal?*
- *Create activities and assignments that guide students toward the lesson goal?*
- *Create lessons and activities designed with options mentioned under the three principles of Engagement, Representation and Action and Expression?*
- *Create assessments directly related to the lesson's goal?*
- *Create assessments designed with the options listed under Action and Expression?*
- *Use a variety of tools and Suggested Learning Strategies and Resources to create my lesson plans?*

Nelson makes the following recommendation:

*Start small. Choose one focus within the framework. Choose one focus within your practice. Enlist the involvement of other teachers, and talk with each other about your experiences. Trade suggestions. Share experiences. Share successes. Watch for change. (p. 136)*

The curriculum has been created to support the design of learning environments and lesson plans that meet the needs of all learners. The **Planning for All Learners Framework** will guide and inspire daily planning.

## 2.3 English as an Additional Language Curriculum

Being the only official bilingual province, New-Brunswick offers the opportunity for students to be educated in English and/or French through our public education system. The New Brunswick Department of Education and Early Childhood Development (EECD) provides leadership from K-12 to assist educators and many stakeholders in supporting newcomers to New-Brunswick. English language learners have opportunities to receive a range of instructional support to improve their English language proficiency through an inclusive learning environment. NB EECD, in partnership with the educational and wider communities offer a solid, quality education to families with school-aged children.

## 2.4 Assessment Practices

Assessment is the systematic gathering of information about what students know and are able to do. Student performance is assessed using the information collected during the evaluation process. Teachers use their professional skills, insight, knowledge, and specific criteria that they establish to make judgments about student performance in relation to learning outcomes. Students are also encouraged to monitor their own progress through self-assessment strategies such as goal setting and rubrics.

Research indicates that students benefit most when assessment is regular and ongoing and is used in the promotion of learning (Stiggins, 2008). This is often referred to as formative assessment. Evaluation is less effective if it is simply used at the end of a period of learning to determine a mark (summative evaluation).

Summative evaluation is usually required in the form of an overall mark for a course of study, and rubrics are recommended for this task. Sample rubrics templates are referenced in this document, acknowledging teachers may have alternative measures they will apply to evaluate student progress.

Some examples of current assessment practices include:

Questioning

Conferences

Demonstrations

Presentations

Portfolios

Observation

Role plays

Technology Applications

Projects and Investigations

Checklists/Rubrics

Responses to texts/activities

Reflective Journals

Self and peer assessment

Career Portfolios



## **Formative Assessment**

Research indicates that students benefit most when assessment is ongoing and is used in the promotion of learning (Stiggins, 2008). Formative assessment is a teaching and learning process that is frequent and interactive. A key component of formative assessment is providing ongoing feedback to learners on their understanding and progress. Throughout the process adjustments are made to teaching and learning.

Students should be encouraged to monitor their own progress through goal setting, co-constructing criteria and other self-and peer-assessment strategies. As students become more involved in the assessment process, they are more engaged and motivated in their learning.

Additional details can be found in the [Formative Assessment](#) document.

## **Summative Assessment**

Summative evaluation is used to inform the overall achievement for a reporting period for a course of study. Rubrics are recommended to assist in this process. Sample rubrics templates are referenced in this document, acknowledging teachers may have alternative measures they will apply to evaluate student progress.

For further reading in the area of assessment and evaluation, visit the Department of Education and Early Childhood Development's [Assessment and Evaluation site](#).

## **2.5 Cross-Curricular Literacy**

Literacy occurs across learning contexts and within all subject areas. Opportunities to speak and listen, read and view, and write and represent are present every day -in and out of school. All New Brunswick curricula include references to literacy practices and materials are available to embed explicit strategies for strengthening comprehension and to help teachers strengthen their students' reading skills.

Key documents that highlight specific cross- curricular strategies include: [K-2 Literacy Look Fors](#), [3-5 Literacy Look Fors](#), [Cross-Curricular Look Fors](#) (Grades 6-12) and [Cross-Curricular Reading Tools](#). These documents describe learning environments and key strategies that support cross-curricular literacy practices.

## 3. Subject Specific Guidelines

### 3.1 Rationale for this course

This course is designed to appeal to a wide range of learners including students for whom this will serve to fulfill their science graduation requirement and students who will take additional science courses. A study of Human Physiology will be relevant to every student, providing them with the tools they will need to make informed choices about their own health and that of others. It will also be relevant to those students who will be going on to careers in the social sciences, kinesiology and health care.

This course focuses on the biology and healthy functioning of all of the major human body systems and how wellness can be compromised by struggles with mental and social health, lifestyle choices and disorders.

### 3.2 Course Description

The goal of this course is to build an understanding of the physiology of the human body as a complex dynamic organism that is self-contained but impacted by and responsive to the outside world.

The study of the human body is placed in the context of overall health and the interaction between mental, social and physical wellness, making links with previous studies of nutrition and fitness.

The course focuses on developing an understanding of the structure and functions of each human body system with relation to other systems and the overall health of student. The vocabulary needed is developed with a focus on enabling students to discuss and describe the functions of each system.

The healthy functioning of each body system are studied. Specific ways that this health can be compromised are then explored. These will be conditions that are relevant and of interest to the students. Students will explore the effect of exercise, sleep, stress, and nutrition on their health as well as causes, symptoms, and treatments of a variety of diseases and conditions.

Links between systems will be made throughout the course, emphasizing the interdependence of all systems, and the concept of overall body health.

Throughout the course students will build their scientific literacy skills as they learn to navigate the extensive volumes of information on human health now available - in particular on the Internet. Being able to critically analyze the validity of health, diet, and medical claims will be invaluable to all students as they make personal lifestyle choices for their future as independent adults. (Planey & Hug Jan 2012).

By the end of the course students will have developed a holistic **Personal Wellness Plan**, demonstrating their understanding of overall health, human physiology, and the effect of disease and lifestyle choices.

Planey, J. & B. Hug (Jan 2012). Climbing the pyramid: Helping students evaluate science news sources. *The Science Teacher*. pp 37-40.

### 3.3 Scientific Literacy

This course provides a rich opportunity for students to develop and use scientific literacy skills. These include the ability to plan and carry out experiments and to interpret and apply the data collected. Students should demonstrate their ability to:

- Propose scientific questions.
- State a prediction and a hypothesis based on an observed pattern of events.
- Identify major variables to control and test in investigations.
- Plan a set of steps to solve a practical problem.
- Record observations and collect relevant data.
- Classify by attributes and display relevant data.
- Analyze data trends and identify discrepancies and sources of error.
- Draw conclusions and explore next steps.
- Apply learning to a larger context.

Student inquiry should not be confused with students learning content, watching demonstrations or doing “labs”. Rather, this learning is a starting point from which student inquiry can arise and critical analysis can be done.

Of particular relevance for this course will be students’ ability to question and be critical of information they gather on human health and wellness issues, particularly printed or electronic material from questionable sources.

### 3.4 Science Safety Guidelines

For laboratory work teachers must refer to the [Science Safety Guidelines](#) for New Brunswick. Of particular relevance to this course are the *Specific Safety Guidelines for Biology* (p.25) which includes guidelines for handling micro-organisms and doing animal dissections, and prohibits the sampling of human cells and tissues.

**Prohibited** in NB schools are experiments or demonstrations involving:

- mammalian blood
- fresh or frozen mammalian tissue
- urine and faecal materials
- cheek cell scrapings
- human cell or tissue sampling

### 3.5 New Brunswick's Wellness Strategy

[The New Brunswick Wellness Strategy 2014-2021](#) supports action on all dimensions of wellness and determinants of health, encourages a comprehensive approach and focuses on inclusiveness and equity. The renewed framework also promotes using a mental fitness approach to wellness, which is critical to motivation and engagement.

From the document:

“Wellness is the optimal state of health and well-being of individuals and groups. It is the ability of people and communities to reach their fullest potential, both in terms of health and fulfillment of purpose. The active pursuit of good health and the removal of personal and societal barriers to healthy living are key elements to achieving wellness.”

The seven dimensions of wellness identified in New Brunswick's Wellness Strategy are:

- |                            |  |
|----------------------------|--|
| <b>Emotional</b>           | ... we understand ourselves, share feelings and cope with the challenges life can bring.   |
| <b>Mental/Intellectual</b> | ... we are open to new ideas and experiences that can be applied to personal decisions, group interaction and community betterment.          |
| <b>Physical</b>            | ... we take care of our bodies and get through our daily activities without undue fatigue or physical stress.                                |
| <b>Social</b>              | ... we can relate to and connect with other people.  |
| <b>Spiritual</b>           | ... we live meaningful and purposeful lives, and establish peace and harmony in our lives.   |
| <b>Environmental</b>       | ... we recognize our own responsibility for the quality of the air, the water and the land that surrounds us.                                |
| <b>Occupational</b>        | ... we get personal fulfillment from our jobs or our chosen career fields, work in a healthy environment, and maintain balance in our lives. |

### 3.6 GCO and SCO Outcome Summary

This curriculum identifies General Curriculum Outcomes (GCO), Specific Curriculum Outcomes (SCO), and Achievement Indicators.

**GCO 1: Demonstrate an understanding that the various dimensions of wellness interact and impact on one another and on the structures and functioning of the human body.**

- SCO 1.1 Explore factors which impact on overall wellness
- SCO 1.2 Develop a Personal Wellness Plan.

**GCO 2: Demonstrate an understanding of the structures and functions of the human digestive system.**

- SCO 2.1 Describe and model the structures and functions of a healthy digestive system.
- SCO 2.2 Explore factors which compromise the healthy functioning of the digestive system.
- SCO 2.3 Describe how the digestive system links to other body systems.
- SCO 2.4 Consider what you have learned about the digestive system and integrate it into your Personal Wellness Plan

**GCO 3: Demonstrate an understanding of the structures and functions of the human skeletal, muscular and integumentary systems.**

- SCO 3.1 Describe and model the structures and functions of a healthy human skeletal, muscular and integumentary system.
- SCO 3.2 Explore factors which compromise the healthy functioning of the human skeletal, muscular and integumentary system.
- SCO 3.3 Describe how the human skeletal, muscular and integumentary systems link to other body systems
- SCO 3.4 Consider what you have learned about the human skeletal, muscular and integumentary systems and integrate it into your Personal Wellness Plan

**GCO 4: Demonstrate an understanding of the structures and functions of the human circulatory and respiratory systems.**

- SCO 4.1 Describe and model the structures and functions of healthy circulatory and respiratory systems.
- SCO 4.2 Explore factors which compromise the healthy functions of the circulatory and respiratory systems.
- SCO 4.3 Describe how the circulatory and respiratory systems link to other body systems
- SCO 4.4 Consider what you have learned about the circulatory and respiratory systems and integrate it into your Personal Wellness Plan

**GCO 5: Demonstrate an understanding of the structures and functions of the human endocrine and reproductive systems.**

- SCO 5.1 Describe and model the structures and functions of healthy endocrine and reproductive systems.
- SCO 5.2 Explore factors which compromise the healthy functioning of the endocrine and reproductive systems.
- SCO 5.3 Describe how the endocrine and reproductive systems link to other body systems
- SCO 5.4 Consider what you have learned about the endocrine and reproductive systems and integrate it into your Personal Wellness Plan

**SCO 6: Demonstrate an understanding of the structures and functions of the human nervous system.**

- SCO 6.1 Describe and model the structures and functions of a healthy nervous system.
- SCO 6.2 Explore factors which compromise the healthy functioning of the nervous system.
- SCO 6.3 Describe how the nervous system links to other body system
- SCO 6.4 Consider what you have learned about the nervous system and integrate it into your Personal Wellness Plan

## 4. Curriculum Outcomes

<b>GCO 1</b> Demonstrate an understanding that the various dimensions of wellness interact and impact on one another and on the structures and functioning of the human body.	
<b>SCO 1.1</b>	<b>Explore factors that impact on overall wellness</b>
<i>Concepts and Content</i>	<i>Achievement Indicators</i>
<p>Students have explored health and wellness in previous courses (<a href="#">Scope and Sequence</a>). In this course students will build on this knowledge to study the connections between the various dimensions of wellness and how they affect and are affected by the structures and functioning of the human body.</p> <p>Wellness is a balance between the seven dimensions of wellness, and is affected by family and peer relationships, societal expectations, media, and culture.</p> <p>Students will explore wellness factors including:</p> <ul style="list-style-type: none"> <li>• Stress levels and the influence of conflict, relationships, anxiety and depression</li> <li>• Addictions and use of tobacco, marijuana, alcohol, illegal and legal drugs</li> <li>• Sleep and physical activity, the causes and effects of too much or too little and the need for a balance between the two</li> <li>• Nutrition and healthy eating and the importance of eating appropriate amounts of a variety of food types for balanced nutrition, growth and repair. Include role of proteins, carbohydrates, fats, and some examples of vitamins and minerals.</li> <li>• Infection and disease including examples of the effects on whole body health             <ul style="list-style-type: none"> <li>○ Prevention through good hygiene, first aid and food handling</li> <li>○ Resistance through naturally acquired immunity and vaccinations (childhood vaccinations - measles, mumps, polio, rubella, tetanus, diphtheria)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Define and explore the wellness spectrum and the connections between the seven dimensions of wellness as defined in <a href="#">New Brunswick's Wellness Strategy 2014-2021</a></li> <li>• Explore how emotions, thoughts, behaviours and actions affect wellness.</li> <li>• Explore factors that can impact on wellness and a sense of well-being. Include:             <ul style="list-style-type: none"> <li>○ Stress Management</li> <li>○ Addictions</li> <li>○ Sleep and Physical Activity</li> <li>○ Nutrition and Healthy Eating</li> <li>○ Infections and Diseases</li> </ul> </li> <li>• Research and report on the health effects and addictive nature of smoking and tobacco use.</li> <li>• Research and report on the health effects of extreme diets and eating disorders.</li> <li>• Research and report on the importance of vaccinations.</li> </ul>

SCO 1.2	Develop a Personal Wellness Plan	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<p>This will be the beginning of the development of a <b>Personal Wellness Plan</b> for each student. This plan will include:</p> <ul style="list-style-type: none"> <li>• assessing current personal level of wellness</li> <li>• determining personal wellness goals</li> <li>• reflecting on strategies that will support moving towards their wellness goals</li> <li>• planning to make adjustments to fitness, nutrition and behaviour patterns and habits to increase personal wellness</li> </ul> <p>This plan will be revised and added to as each system is explored.</p>	<ul style="list-style-type: none"> <li>• Begin the development of a <b>Personal Wellness Plan</b> integrating what has been learned.</li> </ul>	

## **GCO 1 Resources**

[Scope and Sequence](#)

[General Resources](#)

### **SCO Specific Resources**

#### **Online Resources**

##### Wellness

- [NB Wellness Strategy](#)
- [The Link Program NB](#)
- [The State of Public Health in New Brunswick 2013: Heart Health](#)
- [Healthy Schools NB](#)
- [Explore Mental health](#) (Canada Public Health Agency of Canada)
- [Canadian Mental Health Association](#)
- [Centre for Addiction and Mental Health](#)
- [Canadian Network for Mood and Anxiety Treatments](#)
- [Stress effects on the body \(APA\)](#)
- [Stress effects \(American Institute of Stress\)](#)
- [Consequences of negative stress](#)
- [Effects of Stress \(Healthline\)](#)
- [Addictions](#)
- [Effects of Drug abuse](#)

##### Tobacco Use

- [Tobacco Resources for Schools](#)
- [Leave the Pack Behind \(Ontario\)](#)
- [NB Anti-Tobacco Coalition](#)
- [New Brunswick Health Council](#)
- [Smoking Profile for New Brunswick Youth](#)
- [Tobacco-Free Living \(NB\)](#)
- [The State of Public Health in New Brunswick 2013: Heart Health](#)
- [World Health Organization: Tobacco Free Initiative](#)
- [World Health Organization: Tobacco Free Initiative – Link to Poverty](#)
- [The Tobacco Atlas – Tobacco and Poverty](#)



## Sleep

- [Why do we sleep? \(TED Talk\)](#)
- [Why is sleep important? \(NIH\)](#)
- [10 Reason \(Healthline\)](#)
- [Healthy Sleep \(Harvard\)](#)

## Nutrition and Healthy Eating

- [TeachNutrition Videos](#)
- [Canada's Food Guide](#) (Health Canada)
- [Canada's Food Guide – First Nations, Inuit, Métis](#) (Health Canada)
- [Eat Well and Be Active Educational Toolkit](#) (Health Canada)
- [Super-Size Me Video Sheet](#)
- [Nutrition Labelling](#) [PPT Nutrition Labelling](#) (Health Canada)
- [Murder and a Meal](#) Lab techniques to detect major nutrients (carbohydrates, protein, and fats)

## Vaccinations

- [Canadian Immunization Guide](#) Public Health Agency of Canada
- [Vaccine Safety](#) Centers for Disease Control and Prevention (U.S.A.)
- [Vaccination Myths and Facts](#) World Health Organization
- [Institute for Vaccine Safety](#) Johns-Hopkins University

<b>GCO 2</b> Demonstrate an understanding of the structures and functions of the human digestive system.	
<b>SCO 2.1</b>	<b>Describe and model the structures and functions of a healthy digestive system.</b>
<i>Concepts and Content</i>	<i>Achievement Indicators</i>
<p>Students should develop a working knowledge of the following concepts and terms. Students will not be required to memorize these terms, but should be able use them to describe the structures and functions of the digestive system.</p> <ul style="list-style-type: none"> <li>○ taste buds, smell receptors, teeth, esophagus, sphincters, stomach (stomach muscles), small intestine (villi, liver, gall bladder, pancreas), large intestine, rectum, anus</li> <li>○ chewing, swallowing, peristalsis (esophagus and intestines)</li> <li>○ saliva, gastric fluid, mucus, bile, pancreatic fluid</li> </ul>	<ul style="list-style-type: none"> <li>● Describe the structures and functions of the digestive system.</li> <li>● Design and carry out an experiment to test one aspect of chemical or mechanical digestion of a type of food.</li> <li>● Develop and use a model to illustrate the functions of components of specific components of the digestive system</li> <li>● Describe the importance of fibre, water and bacteria to a healthy digestive system.</li> </ul>
<b>SCO 2.2</b>	<b>Explore factors which compromise the healthy functioning of the digestive system.</b>
<i>Concepts and Content</i>	<i>Achievement Indicators</i>
<p>Examples of effects on the digestive system:</p> <ul style="list-style-type: none"> <li>○ Addictions such as tobacco use which increases risk of ulcers, and mouth, stomach and intestinal cancers</li> <li>○ Infection and disease including causes, symptoms and treatments for a variety of conditions and diseases such as: cirrhosis of the liver, gall stones, ulcers, celiac disease, acid reflux, constipation and diarrhea, tooth decay</li> </ul>	<ul style="list-style-type: none"> <li>● Explore the effect of wellness factors on the digestive system. Include: <ul style="list-style-type: none"> <li>○ Stress management</li> <li>○ Addictions</li> <li>○ Sleep and physical activity</li> <li>○ Nutrition and healthy eating</li> <li>○ Infection and Disease</li> </ul> </li> <li>● Discuss the use of antibiotics and the effect on bacterial balance in the digestive tract.</li> </ul>

<b>SCO 2.3</b>	<b>Describe how the digestive system links to other body systems</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<ul style="list-style-type: none"> <li>• All cells/systems are dependent upon the digestive system to absorb nutrients for energy, maintenance, growth and repair</li> <li>• The digestive system depends on other systems: <ul style="list-style-type: none"> <li>○ Integumentary – protection of organs</li> <li>○ Skeletal and Muscular – support and protection</li> <li>○ Muscular contraction – swallowing and peristalsis</li> <li>○ Circulatory/ respiratory – provides oxygen/ carbon exchange for all cells, transport of nutrients from the digestive system to the cells of the body</li> <li>○ Endocrine – hormone control of release of digestive enzymes</li> <li>○ Nervous – control of peristalsis</li> <li>○ Renal – removes water and waste from body</li> <li>○ Immune – protects against microbes and toxins</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the ways in which the digestive system is linked to other body systems <ul style="list-style-type: none"> <li>○ Skeletal, Muscular, Integumentary</li> <li>○ Circulatory, Respiratory</li> <li>○ Endocrine, Reproductive</li> <li>○ Nervous</li> <li>○ Renal</li> <li>○ Immune</li> </ul> </li> </ul>	
<b>SCO 2.4</b>	<b>Consider what you have learned about the digestive system and integrate it into your Personal Wellness Plan.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
As part of the Wellness Plan, incorporate the importance of wellness of the digestive system in overall wellness.	<ul style="list-style-type: none"> <li>• Incorporate into your <b>Personal Wellness Plan</b> ways in which you can maintain or increase the health of your digestive system.</li> </ul>	

## ***GCO 2 Resources***

[Scope and Sequence](#)

[General Resources](#)

### **SCO Specific Resources**

#### **Online Resources**

[Gastro World](#)

[Minds on Activities - Human Physiology and Health](#)

<b>GCO 3</b> Demonstrate an understanding of the structures and functions of the human skeletal, muscular and integumentary systems.	
<b>SCO 3.1</b>	<b>Describe and model the structures and functions of healthy skeletal, muscular and integumentary systems.</b>
<i>Concepts and Content</i>	<i>Achievement Indicators</i>
<p>Students should develop a working knowledge of the following concepts and terms. Students will not be required to memorize these terms, but should be able use them to describe the structures and functions of the skeletal, muscular and integumentary systems.</p> <ul style="list-style-type: none"> <li>• Major bones in the skeleton – skull, mandible, clavicle, scapula, vertebrae, ribs sternum, humerus, radius, ulna, carpal, metacarpal, phalanges, pelvis, femur, patella, fibula, tibia, tarsals, metatarsals.</li> <li>• Structures of the long bone – spongy bone, solid bone, marrow, cartilage, growth plate</li> <li>• Muscle types - skeletal, smooth and cardiac muscle - and how the structure of each type of cell relates to its function</li> <li>• Bone shapes – location and function</li> <li>• Muscles for stretching, strength, balance</li> <li>• Bones and muscles – store nutrients, produce blood cells, protection, support, movement, generating body heat</li> <li>• Fixed and moveable joints - ball and socket, hinge, pivot, sliding, saddle. Include: muscle contraction (<u>not</u> biochemical), origin/insertion major muscle pairing (biceps/ triceps, hamstring/quadriceps, abdominal sheets), ligaments, tendons</li> <li>• Skin - epidermis, dermis, fatty layer (adipose tissue), hair follicle, sweat gland, oil gland, hair, nails, melanin.</li> <li>• Role of healthy and unhealthy bacteria in skin health.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the structure and functions of the skeletal, muscular and integumentary systems.</li> <li>• Develop and use a model to illustrate the form and function of one of the joint types</li> <li>• Describe bone development throughout the life span - from cartilage to bone, bone fusions, density changes</li> <li>• Develop and use a model to illustrate the form and function of the major components of the integumentary system.</li> </ul>

SCO 3.2	Explore factors which compromise the healthy functioning of the skeletal, muscular and integumentary systems.	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<p>Examples of effects on the skeletal, muscular and integumentary systems:</p> <ul style="list-style-type: none"> <li>• Stress levels – increased by sports performance pressures, causes acne and other skin conditions, muscle tension, premature aging</li> <li>• Addictions – tobacco use speeds up aging of skin, causes wounds to heal slowly</li> <li>• Sleep - cell repair and growth</li> <li>• Exercise - maintain muscle strength, bone density, increases blood flow to skin, relieves stress</li> <li>• Nutrition and healthy eating - Vitamin D absorption through skin, calcium required for bone health and muscle contraction</li> <li>• Infections and diseases causes, symptoms and treatment for conditions <u>such as</u>: hernias, bone breaks, osteoporosis, scoliosis, sports injuries spina bifida, rickets, cerebral palsy, ALS, multiple sclerosis, leukemia, arthritis, acne, eczema, psoriasis, scabies, skin ulcers, fibromyalgia, fungal infections, gout, melanoma</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the effect of wellness factors on the skeletal, muscular and integumentary systems. Include: <ul style="list-style-type: none"> <li>○ Stress management</li> <li>○ Addictions</li> <li>○ Sleep and physical activity</li> <li>○ Nutrition and healthy eating</li> <li>○ Infection and Disease</li> </ul> </li> <li>• Investigate the impact of nutrient supplements for enhanced sports performance and physical appearance</li> </ul>	

<b>SCO 3.3</b>	<b>Describe how the skeletal, muscular and integumentary systems link to other body systems.</b>	
<i>Concepts and Content</i>		<i>Achievement Indicators</i>
<ul style="list-style-type: none"> <li>• All cells/systems are dependent upon the skeletal and muscular systems to support and protect. The skin protects the body from damage and infection. Bones produce blood cells</li> <li>• The skeletal, muscular and integumentary systems depend on other systems: <ul style="list-style-type: none"> <li>○ Digestive – absorption nutrients essential to the health of bone, muscle and skin cells and systems</li> <li>○ Circulatory, respiratory - providing oxygen/ carbon exchange for all cells' metabolism, removes wastes. Carries platelets and white blood cells for skin repair.</li> <li>○ Endocrine – hormonal effect on acne and other skin conditions</li> <li>○ Nervous – directing of involuntary and voluntary muscle movement</li> <li>○ Renal – removal of waste and excess water</li> <li>○ Immune – protection against microbes and toxins</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• Discuss the ways in which the skeletal, muscular and integumentary systems are linked to other body systems <ul style="list-style-type: none"> <li>○ Digestive</li> <li>○ Circulatory, Respiratory</li> <li>○ Endocrine, Reproductive</li> <li>○ Nervous</li> <li>○ Renal</li> <li>○ Immune</li> </ul> </li> </ul>
<b>SCO 3.4</b>	<b>Consider what you have learned about the skeletal, muscular and integumentary systems and integrate it into your Personal Wellness Plan.</b>	
<i>Concepts and Content</i>		<i>Achievement Indicators</i>
<p>As part of the Wellness Plan, incorporate the importance of wellness of the skeletal, muscular and integumentary system in overall wellness.</p>		<ul style="list-style-type: none"> <li>• Incorporate into your <b>Personal Wellness Plan</b> ways in which you can maintain or increase the health of your skeletal, muscular and integumentary systems.</li> <li>• Develop an activity/exercise plan that is reasonable to achieve given your current resources.</li> <li>• Develop a skin care and maintenance plan.</li> </ul>

## **GCO 3 Resources**

[Scope and Sequence](#)

[General Resources](#)

### **SCO Specific Resources**

#### **Online Resources**

- [Chicken Wing Dissection](#)
- [Modelling the human skeletal system](#)
- [Lucy skeleton](#)
- [X-rayted Lab . Answer Sheet](#)
- [Skeletal System Tour Lab Answer Sheet](#)
- [Muscular system tour lab . Answer Sheet](#)
- [Muscles Fatigue Lab](#)
- [Biceps/Triceps](#)



<b>GCO 4</b> Demonstrate an understanding of the structures and functions of the human circulatory and respiratory systems.	
<b>SCO 4.1</b>	<b>Describe and model the structures and functions of a healthy circulatory and respiratory system.</b>
<i>Concepts and Content</i>	<i>Achievement Indicators</i>
<p>Students should develop a working knowledge of the following concepts and terms. Students will not be required to memorize these terms but should be able use them to describe the structures and functions of the circulatory and respiratory systems.</p> <ul style="list-style-type: none"> <li>Heart, ventricles, atria, valves, blood vessels, veins (pulmonary), arteries (aorta), capillaries, white blood cells, red blood cells, platelets, plasma, blood types</li> <li>Mouth, nasal cavity, epiglottis, trachea, lungs, bronchi, alveoli, diaphragm</li> <li>Connection between the lungs and the heart in terms of the delivery of oxygenated blood to the body tissues, and the excretion of carbon dioxide and water</li> </ul>	<ul style="list-style-type: none"> <li>Describe the structure and functions of the circulatory and respiratory systems.</li> <li>Discuss healthy blood pressure, heart rate and breathing efficiency.</li> <li>Design and carry out an investigation with a partner to test respiratory rate under various conditions and link this to heart rate.</li> <li>Research blood types as related to transfusions.</li> </ul>

SCO 4.2	Explore factors which compromise the healthy functioning of the circulatory and respiratory systems.	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<p>Examples of effects on the circulatory and respiratory systems:</p> <ul style="list-style-type: none"> <li>• Stress – increases blood pressure, risk of heart attacks, panic attacks.</li> <li>• Sleep – sleep apnea, snoring</li> <li>• Exercise – for heart and blood health</li> <li>• Nutrition – “good” and “bad” cholesterol, trans/saturated/unsaturated fats, effect on heart rate e.g., caffeine/energy drinks, sugar drinks (pop)</li> <li>• Infection and Disease – causes, symptoms and treatments for diseases <u>such as</u>: heart attack, heart murmurs, aneurism, varicose veins, stroke, arterial sclerosis, anemia, emphysema, lung cancer, hemophilia, bronchitis, asthma, pneumonia, cystic fibrosis</li> </ul> <p>Examples of the effects of Tobacco use on the circulatory and respiratory systems:</p> <ul style="list-style-type: none"> <li>• increased risk of heart disease/ heart attack</li> <li>• increased blood pressure, hardening of arteries</li> <li>• decreased blood flow</li> <li>• poor blood circulation in extremities leading to amputations</li> <li>• reduced rate of lung growth</li> <li>• increased risk of emphysema and bronchitis</li> <li>• destruction of cilia which filter harmful substances reducing immunity to disease</li> <li>• increased risk of lung, mouth, throat, and tongue cancer</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the effect of wellness factors on the circulatory and respiratory systems. Include: <ul style="list-style-type: none"> <li>○ Stress management</li> <li>○ Addictions</li> <li>○ Sleep and physical activity</li> <li>○ Nutrition and healthy eating</li> <li>○ Infection and Disease</li> </ul> </li> <li>• Investigate the effects of tobacco use on the circulatory and respiratory systems.</li> </ul>	

<b>SCO 4.3</b>	<b>Describe how the circulatory and respiratory systems link to other body systems.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<ul style="list-style-type: none"> <li>• All cells/systems are dependent upon the circulatory and respiratory system for transport of:               <ul style="list-style-type: none"> <li>○ nutrients from the digestive system and oxygen from the lungs and deliver them to every cell in body</li> <li>○ carbon dioxide and other wastes from cells to the lungs and the kidneys</li> <li>○ hormones from glands to regulate body systems</li> <li>○ white blood cells, antigens, antibodies to fight infection and repair injuries</li> </ul> </li> <li>• The circulatory and respiratory systems depend on other systems:               <ul style="list-style-type: none"> <li>○ Digestion – provides nutrients for blood cell formation; liver detoxifies blood, makes plasma proteins and destroys old red blood cells.</li> <li>○ Skeletal, Muscular, Integumentary – rib cage protects heart, bone marrow produces red blood cells, muscle contraction keeps blood flowing through heart and blood vessels, skin prevents water loss, helps regulate body temperature, and protects blood vessels</li> <li>○ Endocrine, Reproductive – hormones and other chemicals regulate blood volume and blood cell formation</li> <li>○ Nervous – controls nerves that regulate the heart and width of blood vessels</li> <li>○ Renal – filters blood for excess water and excretion of wastes, maintain blood volume, blood pressure and pH levels</li> <li>○ Immune – protects against microbes and toxins in the blood</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the ways in which the circulatory and respiratory systems are linked to other body systems :               <ul style="list-style-type: none"> <li>○ Digestion</li> <li>○ Skeletal, Muscular, Integumentary</li> <li>○ Endocrine, Reproductive</li> <li>○ Nervous</li> <li>○ Renal</li> <li>○ Immune</li> </ul> </li> </ul>	

<b>SCO 4.4</b>	<b>Consider what you have learned about the circulatory and respiratory systems and integrate it into your Personal Wellness Plan.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
As part of the Wellness Plan, incorporate the importance of wellness of the circulatory and respiratory system in overall wellness.	<ul style="list-style-type: none"> <li>• Incorporate into your <b>Personal Wellness Plan</b> ways in which you can maintain or increase the health of your circulatory and respiratory systems.</li> </ul>	
<b>GCO 4 Resources</b>		
<p><a href="#">Scope and Sequence</a></p> <p><a href="#">General Resources</a></p> <p><b><u>SCO Specific Resources</u></b></p> <p><b>Online Resources</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Murder Mystery PDF directions</a> <a href="#">Blood Basics</a></li> <li>• <a href="#">Student Exploration: Circulatory System</a>. Explore blood flow through the body. Student worksheet available.</li> <li>• <a href="#">Circulatory System Web Lab</a> <a href="#">Web Lab Answer Sheet</a></li> </ul>		

**GCO 5** Demonstrate an understanding of the structures and functions of the human endocrine and reproductive systems.

**SCO 5.1**

**Describe and model the structures and functions of a healthy endocrine and reproductive system.**

*Concepts and Content*

Students should develop a working knowledge of the following concepts and terms. Students will not be required to memorize these terms, but should be able use them to describe the structures and functions of the endocrine and reproductive systems.

- Differences between endocrine glands and exocrine glands
- Glands and their hormones: Pituitary, thyroid , adrenal, parathyroid, pineal, pancreas, testes, ovaries
- The pituitary gland and the production of tropic hormone.
- Female reproductive system - ovaries, fallopian tubes, uterus, cervix, vagina , vulva, (urethra)
- Male reproductive system – penis, urethra, vas deferens, prostate, seminal vesicles, bulbourethral glands, testes, scrotum
- Menstrual cycle – menstruation, follicular phase, ovulation, luteal phase
- Sexual intercourse, ejaculation and fertilization
- Contraception and disease protection

*Achievement Indicators*

- Describe the structures and functions of the endocrine and reproductive systems.
- Describe hormone release from endocrine glands
- Identify the major glands of the human body, the hormones each releases, and the function of each hormone
- Describe the structures and functions of the male and female reproductive systems and of the hormones produced in the testes and the ovaries
- Describe the four phases of the menstrual cycle. Highlight ovulation and the day following ovulation as the time within the cycle when an egg may be fertilized.
- Describe the structures and functions of the male and female reproductive systems and of the hormones produced in the testes and the ovaries
- Describe methods of contraception and the use of barrier method as a protection against STI's

<b>SCO 5.2</b>	<b>Explore factors which compromise the healthy functioning of the endocrine and reproductive systems.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<p>Examples of effects on the endocrine and reproductive systems:</p> <ul style="list-style-type: none"> <li>• Stress – hormonal effect on behaviour (fight or flight, depression), puberty, menstruation cycle</li> <li>• Addictions – tobacco lowers sperm count and sex drive, increases risk of cervical and breast cancer, decreases birth weight, infant growth and intellectual development</li> <li>• Nutrition – iodine for thyroid health, diet to support pancreas health and insulin regulation</li> <li>• Infection and Disease causes, symptoms and treatments for diseases <u>such as</u>: endometrioses, hyperthyroidism, diabetes, dwarfism, cancer (cervical, breast, prostate, testicular), the use of epi-pen</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the effect of wellness factors on the endocrine and reproductive systems. Include: <ul style="list-style-type: none"> <li>○ Stress management</li> <li>○ Addictions</li> <li>○ Sleep and physical activity</li> <li>○ Nutrition and healthy eating</li> <li>○ Infection and Disease</li> </ul> </li> <li>• Research and report on the effect of chemical and drug abuse on reproduction, conception and fetal development.</li> <li>• Research and report on the prevention, transmission, and treatment of a variety of sexually transmitted infections (STI's).</li> <li>• Research an inherited genetic disorder <u>or</u> the inheritance of blood types.</li> </ul>	
<b>SCO 5.3</b>	<b>Describe how the endocrine and reproductive link to other body systems.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<ul style="list-style-type: none"> <li>• All cells/systems are dependent upon the endocrine system for regulation of body processes and the reproductive system for procreation</li> <li>• The endocrine and reproductive systems depend on other systems: <ul style="list-style-type: none"> <li>○ Digestive – provides nutrients for cell health and developing fetus</li> <li>○ Skeletal, Muscular, Integumentary – support of structures, childbirth</li> <li>○ Circulatory, Respiratory- transports nutrients and oxygen and wastes and carbon dioxide to and from all cells</li> <li>○ Nervous – signals arise in the brain for the release of hormones</li> <li>○ Renal – excretion of water and wastes from cells</li> <li>○ Immune – protects against microbes and toxins</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the ways in which the endocrine and reproductive systems are linked to other body systems <ul style="list-style-type: none"> <li>○ Digestive</li> <li>○ Skeletal, Muscular, Integumentary</li> <li>○ Circulatory, Respiratory</li> <li>○ Nervous</li> <li>○ Renal</li> <li>○ Immune</li> </ul> </li> </ul>	

<b>SCO 5.4</b>	<b>Consider what you have learned about the endocrine and reproductive and integrate it into your Personal Wellness Plan.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
As part of the Wellness Plan, incorporate the importance of wellness of the endocrine and reproductive systems in overall wellness.	<ul style="list-style-type: none"> <li>• Incorporate into your <b>Personal Wellness Plan</b> ways in which you can maintain or increase the health of your endocrine and reproductive systems</li> <li>• As part of your Personal Wellness Plan discuss the impact of STI's and how this will be addressed</li> </ul>	
<b>GCO 5 Resources</b>		
<p><a href="#">Scope and Sequence</a></p> <p><a href="#">General Resources</a></p> <p><b><u>SCO Specific Resources</u></b></p> <p><b>Online Resources</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Endocrine System Outline</a></li> <li>• <a href="#">Teacher's Guide to Endocrine System</a></li> <li>• <a href="#">Reproductive System Lesson Plan</a></li> </ul>		

**GCO 6** Demonstrate an understanding of the structures and functions of the human nervous system.

**SCO 6.1**

**Describe and model the structures and functions of the nervous system.**

*Concepts and Content*

Students should develop a working knowledge of the following concepts and terms. Students will not be required to memorize these terms, but should be able use them to describe the structures and functions of the nervous system

- Nerves, brain, lobes, central and peripheral nervous systems.
- Eyes – pupil, cornea, lens, retina, optic nerve, rods, cones
- Ears – hammer, anvil, stirrup, eardrum, inner ear, eustachian tube
- Touch, taste buds, smell receptors and nerves
- Five senses (touch, taste, smell, sight and hearing) and how messages are interpreted by the brain.

*Achievement Indicators*

- Describe the structure and functions of the nervous system.
- Illustrate the concept of reflexes



SCO 6.2	Explore factors which compromise the healthy functioning of the nervous system.	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<p>Examples of effects on the nervous system:</p> <ul style="list-style-type: none"> <li>• Stress management <ul style="list-style-type: none"> <li>○ Stress generates the “fight or flight” response through the nervous system</li> </ul> </li> <li>• Addictions – effects of addictions to legal and illegal drugs</li> <li>• Sleep <ul style="list-style-type: none"> <li>○ For cell repair, retaining information, oxygen flow to the brain, improved motor skills</li> <li>○ Lack of sleep decreases activity in parts of the brain that control emotions, decision making, and social interactions</li> </ul> </li> <li>• Nutrition and eating habits <ul style="list-style-type: none"> <li>○ Vitamin A deficiencies affect vision</li> </ul> </li> <li>• Infection and diseases - causes, symptoms and treatments of conditions <u>such as</u>: epilepsy, Parkinson’s, multiple sclerosis, Amyotrophic lateral sclerosis (ALS), Huntingtons’s, Alzheimer’s, concussions, deafness, glaucoma</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the effect of wellness factors on the nervous system. Include: <ul style="list-style-type: none"> <li>○ Stress management</li> <li>○ Addictions</li> <li>○ Sleep and physical activity</li> <li>○ Nutrition and healthy eating</li> <li>○ Infection and Disease</li> </ul> </li> <li>• Discuss the short and long term effects of a variety of drugs on the brain and nervous system including stimulants, depressants, cocaine, opiates, marijuana, alcohol and tobacco</li> </ul>	

<b>SCO 6.3</b>	<b>Describe how the nervous system links to other body systems.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
<ul style="list-style-type: none"> <li>• All cells/systems are dependent upon the nervous system to sense the environment and regulate processes and activity</li> <li>• The nervous system depends on other systems: <ul style="list-style-type: none"> <li>○ Digestive – signals to swallow and peristalsis, sense of taste and smell</li> <li>○ Skeletal, Muscular, Integumentary – support and protection of nerves, sense of touch in skin</li> <li>○ Circulatory, Respiratory – nutrients to and from nerve cells</li> <li>○ Endocrine, Reproductive – responds to stimulate processes and activities</li> <li>○ Renal – removes waste from body</li> <li>○ Immune – protects against microbes and toxins</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the ways in which the nervous system is linked to other body systems <ul style="list-style-type: none"> <li>○ Digestive</li> <li>○ Skeletal, Muscular, Integumentary</li> <li>○ Circulatory, Respiratory</li> <li>○ Endocrine, Reproductive</li> <li>○ Renal</li> <li>○ Immune</li> </ul> </li> </ul>	

<b>SCO 6.4</b>	<b>Consider what you have learned about the nervous system and integrate it into your Personal Wellness Plan.</b>	
<i>Concepts and Content</i>	<i>Achievement Indicators</i>	
As part of the Wellness Plan, incorporate the importance of wellness of the nervous system in overall wellness.	<ul style="list-style-type: none"> <li>• Incorporate into your <b>Personal Wellness Plan</b> ways in which you can maintain or increase the health of your nervous system</li> <li>• Include a description of how alcohol and drug use can impact personal physical, mental and social health and discuss the implications.</li> </ul>	
<b>GCO 6 Resources</b>		
<p><a href="#">Scope and Sequence</a></p> <p><a href="#">General Resources</a></p> <p><b><u>SCO Specific Resources</u></b></p> <p><b>Online Resources</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Reflex Lab</a></li> <li>• <a href="#">Nutrient Effects on the Nervous System</a></li> <li>• <a href="#">Human Physiology and Health activities</a></li> </ul>		

## 5. Scope and Sequence

Students have explored and discussed personal wellness and health throughout their schooling. The Grades 6, 7, 8 *Health* curriculums, and the Grade 9/10 *Physical Education and Health* curriculum explore strategies to develop person health and wellness through good nutrition and healthy active life habits. All students would have taken these courses.

*Wellness through Physical Education 110* is an elective which students may or may not have taken prior to this course. In it students explore personal wellness and how it is influenced by society, media and culture.

This Scope and Sequence lists the curriculum outcomes covered in previous courses that relate to the material covered in *Human Physiology 110*.

### **Grade 6 Health**

- B1) describe the domains of wellness and identify strategies for promoting their own wellness
- B2) identify strategies for promoting nutrition and physical activity
- B3) identify how environments influence health choices
- B4) identify how advertisements are used to promote health explain the use and misuse of substances which may assist weight loss or body building
- C3) define what is meant by addictive behaviours and discuss why some individuals are more prone to addictions
- D1) understand the changes that occur in the body during puberty
- D2) understand the structures and functions of male and female reproductive systems
- D3) understand that sexuality is an expression of one's "femaleness" or "maleness"

### **Grade 7 Health**

- A2) describe selected examples of infectious and noninfectious disease, identifying their detection and prevention
- B1) identify strategies for promoting their own wellness
- B2) identify needs pertaining to student wellness in school
- B3) describe the process required to implement and evaluate a change that improves student wellness
- C1) identify and describe the negative effects of alcohol and drugs
- C2) identify, describe and practice refusal skills in order to take personal responsibility

C3) identify and analyse influences, especially from peers and media/promotions, that impact on choices regarding healthy or unhealthy behaviours (eg. smoking, drinking, dieting)

D1) understand that sexuality integrates many aspects of each of our lives

D2) review the structure and the function of the male and female reproductive systems

D3) describe fertilization, pregnancy and childbirth

D4) recognize and evaluate different kinds

### **Grade 8 Health**

B1) identify strategies for promoting their own wellness

B2) identify factors that enhance health or that cause illness

C1) understand what an addiction is and how it can make a person keep doing something unhealthy or destructive

C2) practice positive decision-making as it relates to self and others

D1) understand the role of the media in establishing feelings and attitudes about ourselves and relationships with others, including dating and becoming sexually active

D2) understand the choices and realize both the long-and short-term consequences and responsibilities that exist with becoming sexually active

### **Science 8**

304-8 relate the needs and functions of various cells and organs to the needs and functions of the human organism as a whole

304-7 explain structural and functional relationships between and among cells, tissues, organs and systems in the human body

304-8 relate the needs and functions of various cells and organs to the needs and functions of the human organism as a whole.

304-9 describe the basic factors that affect the functions and efficiency of the human respiratory, circulatory, digestive, excretory, and nervous systems

### **Physical Education and Health 9/10**

1.K1 Explain the concept of healthy active living and the wellness-awareness continuum

1.K.4 Demonstrate an understanding of the concepts of balanced diet using Health Canada Standards and an ability to apply them to a personal plan.

1.K.5 Explain the effects of substances on the body and the consequences of their misuse

1.K.6 Explain how to prevent sexually transmitted infections (STIs) and pregnancy.

2.K.2 Demonstrate an understanding of the major systems of the body and apply the knowledge to personal goal setting in health, wellness, and fitness.

2.K.5 Apply decision making models with regard to substance use and abuse and to sexual decision making.

2.K.1 Differentiate between the benefits of active living and physical fitness development, based on the wellness continuum

- 2.K.4 Apply knowledge of food labelling information in order to make healthy food choices
- 3.K1 Develop a personal plan for healthy active living
- 3.K.2 Specify the factors related to health and fitness development that affect choices of physical activities within a personal plan.
- 3.K.3 Adapt concepts of energy consumption and expenditures, for use within their own healthy eating plan.

### **Grade 9 Science**

- 304-11 illustrate and describe the basic process of cell division, including what happens to the cell membrane and the contents of the nucleus
- 305-1 recognize that the nucleus of a cell contains genetic information and determines cellular processes
- 305-2 distinguish between sexual and asexual reproduction in representative organisms
- 305-3 compare sexual and asexual reproduction in terms of their advantages and disadvantages
- 305-5 discuss factors that may lead to changes in a cell's genetic information.

### **Wellness through Physical Education 110**

- SCO 1.1 Students investigate what it means to be well.
- SCO 1.2 Students evaluate and address personal wellness needs.
- SCO 1.3 Students analyze how society, media and culture influence wellness.
- SCO 3.1 Students examine health and skill related fitness components
- SCO 3.2 Students evaluate nutritional suggestions for healthy eating
- SCO 3.3 Students investigate the impact of mental fitness on healthy living
- SCO 3.4 Students create a healthy active living plan applying fitness principles, nutritional guidelines and mental fitness.

## 6. General Resources

### Online Resources

The internet is a common tool for inquiry. As students explore topics in this course they will be exposed to information that may or may not be supported by legitimate studies. This will be a good opportunity to build critical thinking skills. Students should be given practice at debunking diet, fitness and other health claims by knowing how to identify sites that can be trusted. By the end of this course, students should have a good understanding of how a healthy body works and good sources of information allowing them to make informed decisions about their health and that of others.

In general, sites that can be trusted to offer accurate information would include government sites, university or college sites, professional associations, and textbooks or resources from an established publishing company. Those that may be suspect include those that are trying to sell a product, or have a political agenda. It is at the teachers' professional discretion to review and select those resources that are appropriate for their students' learning.

Teachers should begin with a trusted science resource to build understanding. From that basis students will begin to research and construct understanding on health matters, and to be challenged to critically assess the validity of their information. The following are some online resources that teachers have found helpful:

- Online tools such as [Definition of Wellness](#) can be used for students to assess their own wellness, and the variety of factors that impact on wellness. However, information on sites such as this for which the owner is not stated and products are sold, should be thoroughly vetted by teachers before sharing with students.
- Canadian Government: Activities and resources on physical activity, vaccinations, nutrition and more can be found on the [Public Health Agency](#) of Canada site (1.2), and on the Health Canada site [Eat Well and Be Active Educational Toolkit](#), [Canada's Food Guide . Nutrition Labelling](#)
- Depending on the fast food restaurant, nutrition guides are more or less easy to find. Check out restaurants that students often frequent e.g., [Subway](#), [Tim Horton's](#), [MacDonald's](#) [Burger King](#), [Harvey's](#) etc.
- Information on fad diets using online resources such as: [Fad Diets PPT](#)
- US Government Sites include: [US Department of Health and Human Services](#) , [National Institutes of Health](#) , [Centers for Disease and Control and Prevention](#) , [US National Library of Medicine](#)
- [Body Cells](#) Youtube Microscopic Human Body Cells
- [Inside the Living Body](#) Youtube Human Growth and Development

## Text Resources for Reference and Teaching

*A Wellness Way of Life* 9<sup>th</sup> edition, by Robbins, Powers and Burgess 2011 McGraw Hill ISBN 978-0-07-352383-5

*BC Biology 12*, by Chau, Mader and Windelspecht 2013 McGraw Hill Ryerson ISBN 978-1-25-908814-6

*Biology: An Everyday Experience*, by Kaskel, Hummer and Daniel. 2003 Glencoe/McGraw-Hill ISBN 0-07-829749-4

*Human Biology Book Set*, 2004 National Geographic (Nelson Publishing) ISBN 978-1426351136

*Memmler's The Human Body in Health and Disease* 13<sup>th</sup> edition, 2015 by Cohan and Hull Wolters Kluwer ISBN 978-1-4511-9280-3

### Used for other NB courses:

*Biology* by Miller and Levine, 2008 Prentice Hall Pub, ISBN 0-13-201351-7; Teacher's Edition ISBN 0-13-201351-7;  
TeacherEXPRESS CD ISBN 0-13-203421-2  
(currently used in *NB Biology 11* and *Biology 12* courses),

*Globe Biology (Revised Edition)*, 1999 by Leonard Bernstein Annotated Teacher's Edition, Pearson Education Inc. Globe Fearon ISBN 0-835-95737-3; Laboratory program Teacher's Edition ISBN 0-835-95744-6  
(*Globe Biology 1990* or *1999* previously used for *NB Biology 113* course)