

*Definition of the domain
for summative evaluation*

BLG-5068-2

Biology Secondary V

The Human Nervous System

Reach for
your **Dreams**

Québec 

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for summative evaluation*

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Biology Secondary V

The Human Nervous System

Formation professionnelle et technique
et formation continue

Direction de la formation générale
des adultes

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1. Introduction

This definition of the domain for summative evaluation describes and classifies the essential and representative elements of the *Biology* program—specifically, for the course *The Human Nervous System*. It presents an overview of the program, but should by no means replace the program itself. The purpose of defining the domain is to ensure that all the instruments for summative evaluation are consistent with the overall program.

This definition of the domain is organized in the same way as it is in other courses. The content of each section is, however, specific to this course.

The definition of the domain for summative evaluation is used to prepare examinations that are valid from one version to another, from year to year, and from one school board to another, taking into account the responsibilities shared by the Ministère de l'Éducation and the school boards.

2. Program Orientations and Consequences for Summative Evaluation

Orientations

The purpose of this program is to help students acquire knowledge of human anatomy and physiology.

The purpose of this program is to help students understand how the human body functions.

The purpose of this program is to help students understand the causes and effects of the principal health disorders associated with the human body and the factors that contribute to its health.

Consequences

Evaluation will test the students' knowledge of anatomical and physiological concepts of the human nervous system.

Evaluation will test the students' understanding of how the human nervous system functions.

Evaluation will test the students' ability to establish relationships between acquired anatomical and physiological concepts and the principal health problems associated with the human nervous system.

3. Course Content for Purposes of Summative Evaluation

Themes

- **Anatomy of the Nervous System**
 - Organization of the nervous system:
 - levels of organization
 - description
 - role
 - diagram
 - Description of a neuron:
 - name of parts
 - description of parts
 - role of parts
 - diagram
 - Different types of neurons:
 - shape
 - function
 - role
 - Description of the brain:
 - name of parts
 - description of parts
 - role of parts
 - diagram
 - Description of the spinal cord:
 - name of parts
 - description of parts
 - role of parts
 - diagram
 - Description of peripheral nervous system:
 - cranial nerves and spinal nerves
 - ganglia
 - role and organization
 - Nature of a nerve, a ganglion and a plexus

- **Physiology of the Nervous System**
 - Propagation of nerve impulses
 - Factors that trigger nerve impulses or affect how quickly they are propagated
 - Synapse and neurotransmitters
 - Reflex arc
 - Regulation of respiration and heartbeat
 - Relationship between the different parts of the nervous system

- **Health and Hygiene of the Nervous System**
 - Drugs and alcohol:
 - name of drugs
 - types of drugs
 - mode of action
 - effects on the nervous system
 - Drug and alcohol dependency
 - Effects of heavy metals on the nervous system

Skills

- **Describing:** Observing, identifying or recalling the characteristics of a phenomenon or the components of a system.
- **Explaining:** Showing in a structured way the nature and interaction of complex relationships between objects or phenomena.

4. Table of Dimensions

Themes	Anatomy of the Nervous System 28%	Physiology of the Nervous System 48%	Health and Hygiene of the Nervous System 24%
Skills			
Describing 42%	Organization of the nervous system (4%)		Drugs and alcohol
	Description of a neuron (4%)		
	Types of neurons (4%)		
	Description of the brain (4%)		
	Description of the spinal cord (4%)		
	Description of the peripheral nervous system (4%)		
	Nerve, ganglion and plexus (4%)		
	(1) 28%		(3) 14%
Explaining 58%		Propagation of nerve impulse (8%)	Drug and alcohol dependency (5%)
		Factors affecting nerve impulses (8%)	Effects of heavy metals on the nervous system (5%)
		Synapse and neurotransmitters (8%)	
		Reflex arc (8%)	
		Regulation of respiration and heartbeat (8%)	
		Relationship between different parts of the nervous system (8%)	
	(2) 48%	(4) 10%	

5. Observable Behaviours

Dimension 1

- Name the parts indicated on a diagram of the nervous system and associate each of these parts with roles and descriptive elements appearing on a list. (The list should contain more roles and descriptive elements than are required.) (4%)
- Name the structures indicated on a diagram of a neuron and associate each of these structures with roles and descriptive elements appearing on a list. (The list should contain more roles and descriptive elements than are required.) (4%)
- Given a diagram of a neuron, describe the characteristics of a neuron in terms of shape, function and role. (4%)
- Name the structures indicated on a diagram of the brain and associate each of these structures with roles and descriptive elements appearing on a list. (The list should contain more roles and descriptive elements than are required.) (4%)
- Name the structures indicated on a diagram of the spinal cord and associate each of these structures with roles and descriptive elements appearing on a list. (The list should contain more roles and descriptive elements than are required.) (4%)
- Given a series of statements, choose those that correctly describe the composition of the peripheral nervous system, the role of its components and its function. Correct false statements to make them valid. (4%)
- Given a series of statements, choose those that correctly identify the nature of a nerve, ganglion and plexus. Correct false statements to make them valid. (4%)

Dimension 2

- Given a series of true statements, choose those that relate to the propagation of nerve impulses and arrange these statements chronologically in order to describe the process. (8%)
- Given a series of statements, choose those that correctly explain the factors that trigger nerve impulses or that affect their propagation. Correct false statements to make them valid. (8%)
- Arrange in the correct sequence true statements that describe how a synapse functions in order to explain the process. (An unlabelled diagram of a synapse is provided.) (8%)

- Arrange in the correct sequence true statements that describe various events in a concrete example of a reflex arc in order to explain the process. The statements pertain to apparent events in the reflex and to events that occur at the neurological level. (8%)
- Given a series of true statements concerning the autonomic nervous system, choose the elements of information that help illustrate the regulation of respiration or heartbeat, and arrange the statements in order to explain the process. (8%)
- Given the description of a concrete event, explain the role of the different parts of the nervous system that are called upon during this event. (8%)

Dimension 3

- Given the name of five substances that affect the nervous system, specify, for each one, the type of drug involved, its mode of action and its effects on the nervous system. (14%)

Dimension 4

- Explain briefly why a popular misconception about drug or alcohol dependency is unfounded. (5%)
- Explain briefly how a given heavy metal affects the nervous system. (5%)

6. Explanation of Content and Weighting

In establishing the relative importance of the themes *Anatomy*, *Physiology* and *Health and Hygiene*, greater weight has been assigned to understanding how the respiratory system functions and the factors that help maintain its health, than to memorizing anatomical structures.

The relative importance of each skill to be developed has been determined by adding up the weightings given to the observable behaviours pertaining to that skill.

On the basis of the tasks prescribed by the terminal objectives of the program, the weighting of the themes and skills has been established as follows:

Dimensions related to the theme <i>Anatomy</i>	28%
Dimensions related to the theme <i>Physiology</i>	48%
Dimensions related to the theme <i>Health and Hygiene</i>	24%
Dimensions related to the skill <i>Describing</i>	42%
Dimensions related to the skill <i>Explaining</i>	58%

7. Description of the Examination

A. Type of Examination

The summative examination is a written examination administered at the end of the course. It is designed to measure all of the dimensions and counts for 100% of the final mark. It consists of structured-response and short-response items.

B. Characteristics of the Examination

The examination is written at the end of the course in a single session lasting no more than 120 minutes.

C. Pass Mark

The pass mark for the entire examination is 60%.

