

COURSE NAME: PSW180 Biology for the PSW

Credit Value: 3
Total Course Hours: 42
Prerequisite Course(s): None
Corequisite Course(s): None

COURSE DESCRIPTION

This course will provide a basic knowledge of the anatomy and physiology of the various body systems including the age related changes and common diseases and disorders.

PLAR INFORMATION

This course is eligible for Prior Learning Assessment and Recognition. Students are advised to discuss options with their program coordinator.

COURSE LEARNING OUTCOMES

Upon completion of this course, the student will have reliably demonstrated the ability to:

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| <p>1.0 Identify the structures, planes, regions, and structural levels of organization.</p> <ul style="list-style-type: none">1.1 Define the terms anatomy and physiology1.2 List the levels of organization of the human body1.3 Describe the 12 major organ systems1.4 Define and describe homeostasis1.5 Describe the anatomical position and list common terms for relative positions of the body1.6 Describe the three major planes of the body1.7 List anatomical terms for quadrants and regions of the body1.8 Describe the major cavities of the body <p>2.0 Knowledge of specific details and elements of basic chemistry</p> <ul style="list-style-type: none">2.1 Define the terms matter, element, and atom.<ul style="list-style-type: none">2.1.1 List the four elements that comprise 96% of body weight2.1.2 Describe the three components of an atom2.1.3 Describe the role of electrons in the formation of chemical bonds2.2 Differentiate among ionic, covalent, and hydrogen bonds2.3 Explain ions, including the differences among electrolytes, cations, and anions2.4 Explain the difference between molecule | <ul style="list-style-type: none">and compound, and the reason why water is essential to life2.5 Define pH and differentiate between acid and base2.6 Describe the role of adenosine triphosphate (ATP) in energy transfer and list the six forms of energy2.7 Differentiate among a mixture, solution, suspension, colloidal suspension, and precipitate <p>3.0 Identify the structure and function of basic cell organelles and human cell processes</p> <ul style="list-style-type: none">3.1 Identify the main parts of a cell and explain the role of the nucleus, functions of the main organelles, and components of the cell membrane3.2 Describe transport mechanisms through active and passive movements of substances across a cell membrane3.3 Define tonicity and compare isotonic, hypotonic and hypertonic solutions3.4 Describe the phases of the cell cycle3.5 Explain cell differentiation3.6 Explain the processes and consequences of uncontrolled and disorganized cell growth and apoptosis3.7 Define metabolism, anabolism, and aerobic metabolism of carbohydrates3.8 Explain the use of fats in the body |
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- 3.9 Explain the use of proteins in the body
- 3.10 Describe the roles of DNA and RNA in protein synthesis, the structure of a nucleotide, and the steps in protein synthesis
- 4.0 Identify how basic microbiology effects disease, infection and immunity
- 4.1 Define and describe the characteristics of the different types of pathogens
- 4.2 Describe the types of bacteria by staining characteristics
- 4.3 Identify portals of exit and portals of entry
- 4.4 List common ways by which infections are spread
- 4.5 Identify the microbiological principles around transmission of disease and infection
- 4.6 Describe the process of phagocytosis and the link between inflammation and the role of fever in fighting infection
- 4.7 Differentiate between specific and nonspecific immunity
- 4.8 Describe the differences between genetic immunity and acquired immunity
- 4.9 Describe naturally and artificially acquired active and passive immunity
- 4.10 Describe other immune responses such as anaphylaxis, autoimmunity and prevention of organ rejection
- 5.0 Identify the structure and function of tissues, membranes and integumentary system
- 5.1 List the four major types of tissues
- 5.2 Describe the characteristics, function, types, and classifications of epithelial tissue
- 5.3 Differentiate between endocrine and exocrine glands
- 5.4 Describe the characteristics and function of connective tissue, and list the types of connective tissue membranes
- 5.5 Describe the characteristics and function of nervous and muscle tissues
- 5.6 Explain the process of tissue repair after an injury
- 5.7 Differentiate between mucous and serous membranes
- 5.8 List the function and structure of skin
- 5.9 List the factors that influence the color of skin
- 5.10 Describe the accessory structures of skin: hair, nails and glands
- 5.11 Discuss heat production, heat loss in the body and describe how the skin helps regulate body temperature
- 5.12 Describe how burs are classified and list ways to protect the skin
- 6.0 Identify the structure and function of the urinary system and some common disorders.
- 6.1 Identify the major organs of the urinary system and give the generalized function of each.
- 6.2 Name the parts of the nephron and describe the role each component plays in the formation of urine.
- 6.3 Describe the importance of filtration, tubular reabsorption, and tubular secretion in urine formation.
- 6.4 Describe the mechanisms that control urine volume.
- 6.5 Describe some common disorders of the urinary system.
- 6.6 Label diagrams: the urinary system, and the nephron.
- 7.0 Identify the structure and function of the musculoskeletal system and some common disorders.
- 7.1 List the function of the skeletal system and the classifications of bone by size and shape
- 7.2 Differentiate between the composition and location of compact and spongy bones
- 7.3 Describe the structure of a long bone
- 7.4 Describe the roles of osteoblasts and osteoclasts, and how bone grow in length and width
- 7.5 List and describe the bones in the axial skeleton and appendicular skeleton
- 7.6 List the main types and function of joints and describe the types of joint movement
- 8.0 Identify the structure and function of the muscular system
- 8.1 Identify the three types of muscle tissue
- 8.2 Compare the structure of the whole muscle and the structure of a single muscle fibre
- 8.3 Describe the mechanism of muscle movement

- 8.4 Describe the relationship between skeletal muscles and nerves
- 9.0 Identify the structure and function of the lymphatic system
- 9.1 Explain the three functions of the lymphatic system
- 9.2 Describe the composition and flow of the lymphatic system
- 9.3 Describe the four lymphoid organs.
- 9.4 Identify the location of the lymph nodes - cervical nodes, axillary nodes, and inguinal nodes.
- 10.0 Identify the structures and function of the nervous system, spinal, peripheral nerves and autonomic nervous system
- 10.1 Define the two division of the nervous system
- 10.2 List three general functions of the nervous system
- 10.3 Compare the structure and function of the neuroglia and neuron
- 10.4 Explain the function of the myelin sheath and how a neuron transmits information
- 10.5 Describe the structure and function of synapse
- 10.6 Describe the functions of the four major areas of the brain and the four lobes of the cerebrum
- 10.7 Describe how the skull, meninges, cerebrospinal fluid, and blood-brain barrier protect the CNS
- 10.8 Describe the anatomy of the spinal cord and its three function
- 10.9 Discuss reflexes and list four components of the reflex arc
- 10.10 List and describe the functions of the 12 pairs of cranial nerves
- 10.11 Identify the classification of spinal nerves in the peripheral nervous system
- 10.12 List the function of three major plexuses
- 10.13 Identify the functional classifications of the peripheral nervous system
- 10.14 Describe the function and pathway of autonomic (visceral) reflexes
- 10.15 Identify the differences between the sympathetic and parasympathetic nervous system
- 10.16 Identify the major neurotransmitters of the autonomic nervous system
- 11.0 Identify the composition and function of blood
- 11.1 Describe the three types of blood cells and the explain the formulation
- 11.2 Explain the composition, characteristics, and functions of red and white blood cells and platelets, including the breakdown of red blood cells and the formation of bilirubin
- 11.3 Identify the steps of hemostasis
- 11.4 Describe the four blood types
- 11.5 Describe the Rh factor
- 12.0 Describe the structure and function of the heart
- 12.1 Describe the location of the heart
- 12.2 Identify the three layers and the covering of the heart
- 12.3 Explain the function of the heart as two separate pumps
- 12.4 Identify the four chambers of the heart
- 12.5 Explain the function of the four heart valves
- 12.6 List the vessels that supply blood to the heart
- 12.7 Define cardiac cycle with respect to systole and diastole
- 12.8 Describe how changes in heart rate and/or stroke volume change cardiac output
- 12.9 Describe heart failure and differentiate between right-sided and left-sided heart failure
- 13.0 Describe the structure and function of the organs of the respiratory system
- 13.1 Describe why lungs collapse or expand and the role of pulmonary surfactants
- 13.2 Discuss the steps in respiration, including
- 13.2.1 Describe the relationship of Boyle's law to ventilation
- 13.2.2 Explain how respiratory muscles affect thoracic volume
- 13.2.3 List three conditions that make the alveoli well suited for the exchange of oxygen and carbon dioxide
- 13.3 Discuss the voluntary and involuntary control of breathing
- 13.3.1 Explain the neural and chemical

- control of respirations
- 13.3.2 Describe common variations and abnormalities of breathing
- 14.0 Describe the anatomy, physiology, structure and function of the digestive system
- 14.1 List the functions of the digestive system
- 14.2 Explain the processes of digestion and absorption
- 14.3 Describe the four layers, nerves, and membranes of the digestive tract
- 14.4 Describe the organs and accessory organ of the digestive tract
- 14.5 Describe the effects of amylases, proteases, and lipases
- 14.6 Describe the role of bile in the digestion of fats
- 14.7 Describe five categories of nutrients, as it relates to a balanced diet
- 14.8 Explain how energy is measured, balanced and expended in the body
- 15.0 Describe the anatomy and function of the blood vessels
- 15.1 Describe the pulmonary and systemic circulations
- 15.2 Describe the three layers of tissue found in arteries and veins
- 15.3 List the major arteries of the systemic circulation that are branches of the ascending aorta, aortic arch, and descending aorta
- 15.4 List the major veins of the systemic circulation
- 15.5 Describe the five functions of blood vessels
- 15.6 Discuss the factors that determine blood pressure, and the mechanisms involved in regulation of blood pressure
- 15.7 Explain how blood vessels affect the mechanisms of edema formation
- 15.8 Identify how blood vessels respond to changing body needs and regulation of body temperature
- 16.0 Describe the structure and function of the urinary system
- 16.1 List four organs of excretion
- 16.2 Describe the major organs of the urinary system
- 16.3 Describe the location, structure, blood supply, nerve supply and functions of the kidneys
- 16.4 Explain the role of the nephron unit in the formation of urine
- 16.5 Explain the three processes involved in the formation of urine: filtration, reabsorption, and secretion
- 16.6 Describe the hormone control of water and electrolytes by the kidneys
- 16.7 Describe the normal constituents of urine
- 16.8 Describe the structure and function of the ureters, urinary bladder and urethra
- 17.0 Identify the structures and function of the male and female reproductive system
- 17.1 Describe the structure and function of testes and male genital ducts
- 17.2 Describe the accessory glands that add secretions to the semen
- 17.3 Describe the hormone control of male reproduction, including the effects of testosterone
- 17.4 Describe the structure and function of the ovaries
- 17.5 Describe the structure and function of the female genital tract
- 17.6 Explain the hormonal control of the female reproductive system
- 18.0 Describe the structure and function of electrolytes and acid-base balance
- 18.1 Describe the two main fluid compartments and the composition of body fluids
- 18.2 Define and describe intake and output
- 18.3 Explain the effects of water imbalances
- 18.4 Explain the effect of water imbalances, fluid shift, and fluid spacing
- 18.5 List factors that affect electrolyte balance
- 18.6 Describe the most common ions found in the intracellular and extracellular balance
- 18.7 List three mechanisms that regulate pH in the body
- 18.8 Discuss acid-base imbalances: acidosis and alkalosis
- 19.0 Identify the structures and functions of the body senses
- 19.1 Define the five types of sensory receptors
- 19.2 Describe the four components involved in

the preception of a sensation as well as two important characteristics of sensation

19.3 Describe the five general senses

20.0 Describe the structures and function of the endocrine system

20.1 Describe the role and function of hormones in the body and the process by which hormones bind to the receptor sites of specific

targets. Identify the three mechanisms that control the secretion of hormones

20.2 Identify the pituitary gland and the relationship of the hypothalamus, and the location, regulation.

20.3 Identify the other major endocrine glands and their hormones, and explain the effects of hyposecretion and hypersecretion

GENERAL EDUCATION

This is not a General Education course.

PROGRAM OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved program learning outcomes (PLO):

Personal Support Worker

4. Provide client-centred and client-directed care that is based on ethical principles, sensitive to diverse client and family values, beliefs and needs, and which follows the direction of the plan of care/service plan.
6. Identify relevant client information using basic assessment and communication skills and report and document findings in accordance with the requirements of employer policies and procedures and all applicable legislation.
7. Promote and maintain a safe and comfortable environment for clients, their families, self and others including the implementation of infection prevention and control measures and emergency first aid procedures that are in keeping with the plan of care/service plan, employer policies and procedures, and all applicable legislation.
8. Assist clients across the lifespan with routine activities of daily living by applying basic knowledge of growth and development, common alterations in functioning, disease prevention, health promotion and maintenance, rehabilitation and restorative care.
12. Identify and report situations of neglect, and potential, alleged or witnessed/actual incidents of abuse, and respond in accordance with all applicable legislation and employer's policies and procedures.

ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved essential employability skills (EES) outcomes:

1. Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience.
2. Respond to written, spoken, or visual messages in a manner that ensures effective communication
3. Execute mathematical operations accurately
4. Apply a systematic approach to solve problems
5. Use a variety of thinking skills to anticipate and solve problems
8. Show respect for the diverse opinions, values, belief systems, and contributions of others
10. Manage the use of time and other resources to complete projects.
11. Take responsibility for one's own actions, decisions, and consequences.

EXTERNAL COURSE ACCREDITATIONS AND CONDITIONS

n/a

COURSE EVALUATION

Tests, Quizzes and Classroom Activities: 50%

Assignments: 25%

Exam: 25%

PROGRAM SPECIFIC GRADING

Minimum mark of 65% to pass

College Policies

Credit Transfer

N/A

Plagiarism

To Come

Academic Appeal

<http://www.canadorecollege.ca/sites/default/files/images/Policies%20and%20Procedures/01-Academic%20Appeal%20Policy.pdf>

Attendance

<http://www.canadorecollege.ca/sites/default/files/images/Policies%20and%20Procedures/05-Class%20attendance-09.pdf>

Assignment/Testing

N/A

Human Rights/Respectful College

<http://www.canadorec.on.ca/about-us/creating-respectful-student-community>

Student Services

First People's Centre

Student Success

(Dial 5185 for Campus Life or 5301 for the First People's Centre)

Canadore is committed to Student Success and offers CONFIDENTIAL services to help you in your studies.

Counselling helps with academic, career and personal/crisis issues.

Access Ability Services will accommodate you if you have physical, mobility, visual, auditory, medical and/or learning disabilities.

Health Centre provides services to you in case of illness.

Career Services offers career advice, resume and interviewing workshops.

Accessibility

Student Advising

GRADING SYSTEM

A+:	90-100%	B+:	77-79%	C+:	65-69%	D:	50-54%	S - Satisfactory
A:	85-89%	B:	73-76%	C:	60-64%	F:	0-49%	I - Incomplete
A-:	80-84%	B-:	70-72%	D+:	55-59%			F - Repeat course

*For a complete detailed description please refer to the College website.

LEARNING RESOURCES

Required Text

Herlihy, B. (2014). The Human Body in Health and Illness. 6th Ed. Elsevier Saunders. ISBN 978-0-3234-9836-4

Herlihy, B. (2014). Study Guide for The Human Body in Health and Illness. 6th Ed. Elsevier Saunders.

Resources listed on the course outline support the achievement of learning outcomes, and may be used throughout the course to varying degrees depending on the instructor's teaching methodology and the nature of the resource.

LEARNING ACTIVITIES

Lecture and Laboratory

In Class, Online, Hybrid

In-Class with Online Resources and Activities

Assessment and Evaluation

Course Evaluation Strategy (Assignments, Case Studies, Debates, Portfolio, Quizzes, Tests, Exams, etc.)

Unit tests: 50%

Assignment: 25%

Exam: 25%

Program Specific Grading (i.e.: % to pass, # hrs.)

Minimum mark of 65% to pass

College Policies

Credit Transfer

N/A

Plagiarism

To Come

Academic Appeal

<http://www.canadorecollege.ca/sites/default/files/images/Policies%20and%20Procedures/01-Academic%20Appeal%20Policy.pdf>

Attendance

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Assignment/Testing

N/A

Human Rights/Respectful College

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Access Ability Services will accommodate you if you have physical, mobility, visual, auditory, medical and/or learning disabilities.

Health Centre provides services to you in case of illness.

Career Services offers career advice, resume and interviewing workshops.

Accessibility

Student Advising

Notes/Disclaimers

Waiver of Responsibility

Every attempt is made to ensure the accuracy of this information as of the date of publication. The college reserves the right to modify, change, add, or delete content.

Historical Course Outlines

Students use course outlines to support their learning. They are responsible for retaining course outlines for future use in applications for transfer of credit to other educational institutions.

DELIVERY MODE

This course may be delivered, in whole or in part, in a number of modalities, including in class, online, hybrid, in a synchronous or asynchronous manner or a combination thereof, as per accreditation and/or regulatory standards where appropriate.

ACADEMIC POLICIES

Canadore College is committed to the highest standards of academic integrity, and expects students to adhere to these standards as part of the learning process in all environments. The College's Academic Integrity policy seeks to ensure that all students understand their rights and responsibilities in upholding academic integrity and that students receive an accurate and fair assessment of their work. Please review the Academic Integrity policy (A-18) and other academic policies found on our website:

<https://www.canadorecollege.ca/about/policies>.

COLLEGE POLICIES

- Protecting human rights in support of a respectful college community

For college policies please see: <http://www.canadorecollege.ca/about-us/college-policies>.

STUDENT SUCCESS SERVICES - Your Success Matters!

We provide student-focused services to facilitate students' success in their studies. Staff provide support by reducing and/or removing educational-related barriers through accommodation planning with students with disabilities, learning strategies, mental health and wellness events. Visit our webpage to learn more: <https://www.canadorecollege.ca/support/student-success-services>

FIRST PEOPLES' CENTRE:

A culturally safe environment offering CONFIDENTIAL student focused services, drop in or make an appointment to access:

- One on one counselling
- Elder in residence program
- Peer tutoring
- Peer mentorship
- Lunch & learn workshops on study skills, self-care, life skills
- Learning Resource Centre

Drop by our offices at C254 College Drive, E101 Commerce Court or call 705 474 7600 Ext. 5961 College Drive / 5647 Commerce Court.

WAIVER OF RESPONSIBILITY

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HISTORICAL COURSE OUTLINES

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