

COURSE NAME: IAP120 Anatomy and Physiology II

Credit Value: 3
Total Course Hours: 42
Prerequisite Course(s): IAP 100
Corequisite Course(s): None

COURSE DESCRIPTION

This course is a continuation of Anatomy and Physiology I and will further examine the relationship of body structures and their functions. Understanding of the remaining individual body systems will provide the learner with knowledge on how these systems work together to carry on complex functions of the human body.

LAND ACKNOWLEDGEMENT

Canadore College resides on the traditional territory of the Anishinaabeg and within lands protected by the Robinson Huron Treaty of 1850. This land is occupied by the people of Nipissing First Nation, Treaty #10 in the Robinson Huron Treaty of 1850 since time immemorial.

PLAR INFORMATION

This course is not eligible for Prior Learning Assessment and Recognition.

COURSE LEARNING OUTCOMES

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

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| <p>1.0 Use the appropriate terminology related to the organization, structure and function of the human body.</p> <p>1.1 Review the selected key terms (vocabulary) for each specific area of study/system.</p> <p>2.0 Describe the location, development, structure and function of cells, tissues and organs of stated body systems.</p> <p>2.1 Endocrine System:</p> <p>2.1.1 Explain the role of intercellular communication in homeostasis and describe the complementary roles of the endocrine and nervous systems</p> <p>2.1.2 Describe the major structural classes of hormones and explain the general processes, regulation and effects of hormone action on target organs.</p> <p>2.1.3 Distinguish between endocrine and exocrine glands and their functions.</p> <p>2.1.4 Distinguish between hormones and prostaglandins and their functions.</p> <p>2.1.5 Describe the location, hormones and functions of the hypothalamus, pituitary,</p> | <p>thyroid, parathyroid, adrenal, pancreas and pineal gland.</p> <p>2.1.6 Discuss the function of the hormones produced by the kidneys, heart, thymus, testes , ovaries and adipose tissue.</p> <p>2.1.7 Describe how the endocrine system responds to stress (General Adaptation Syndrome - GAS)</p> <p>2.2 Lymphatic System/Immune System:</p> <p>2.2.1 Explain the structural and functional relationship between the lymphatic and cardiovascular system</p> <p>2.2.2 Identify the components and explain the function of the lymphatic system</p> <p>2.2.3 Explain the source and list components of lymph.</p> <p>2.2.4 Describe the structure and function of lymphatic capillaries and vessels (veins and ducts).</p> <p>2.2.5 Describe the lymphatic pathway and direction of flow.</p> <p>2.2.6 Define immunity and identify the components of the immune system.</p> |
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2.2.7 Identify the location and function of lymph nodes, spleen and thymus gland.

2.2.8 Compare non-specific (innate) defenses with specific (adaptive) defenses.

2.2.9 List the body's non specific defenses (innate) and explain how each functions.

2.2.10 Define specific defenses (adaptive) , identify the forms and properties of immunity and explain the mechanisms of cell-mediated and anti-body mediated (humoral) immunity.

2.2.11 Differentiate between B-lymphocytes and T -lymphocytes.

2.2.12 Discuss the different types of T-cells and their role in adaptive immunity.

2.2.13 Discuss the processes of B cell sensitization, activation and differentiation, describe the structure and function of antibodies (classes of immunoglobulins), and explain the primary and secondary immune responses to antigen exposure.

2.2.14 Differentiate between active and passive immunity and how they can be developed naturally or artificially.

2.2.15 Explain examples of immune disorders and allergies and the effect on the immune system.

2.3 Cardiovascular System (Blood, Heart and Blood Vessels):

2.3.1 Identify and explain the general functions of the circulatory system.

2.3.2 Describe the general characteristics of blood.

2.3.3 Identify the functions of the components of blood, e.g., red blood cells, white blood cells, platelets, plasma.

2.3.4 List the characteristics and functions of red blood cells, describe the structure and function of hemoglobin, describe how RBC components are recycled and explain erythropoiesis

2.3.5 Explain the basis of blood typing and why it is important including the ABO and RH group systems.

2.3.6 Categorize the 5 different white blood cells on the basis of their structure

(granulocytes vs agranulocytes) and function and discuss the factors that regulate their production.

2.3.7 Describe the structure, function and production of platelets.

2.3.8 Describe the basic sequence of blood clotting including the extrinsic, intrinsic and common pathways.

2.3.9 Identify the structure and function of the heart

2.3.10 Trace the flow of blood through the heart, identifying the major blood vessels, chambers and heart valves.

2.3.11 Identify parts of the heart conduction system and their functions.

2.3.12 Describe the events of the cardiac cycle and understand the various heart sounds

2.3.13 Define cardiac output, describe the factors that influence heart rate and stroke volume and explain the impact of adjustments in stroke volume and cardiac output.

2.3.14 Describe the basic mechanism of circulation within the body.

2.3.15 Distinguish among the types of blood vessels based on their structure and function (arterioles, arteries, capillaries, venules, veins).

2.3.16 Understand the structure and function of and distinguish between the pulmonary and systemic circuits of the cardiovascular system.

2.3.17 Explain the processes that regulate blood flow through blood vessels

2.3.18 Identify the major veins and arteries and the organs/body regions they supply.

2.3.19 Locate and define pulse and the pulse points and explain how heart rate is regulated.

2.3.20 Define blood pressure and describe its two components and explain how it is regulated.

2.4 Respiratory System:

2.4.1 Describe the primary functions of the respiratory system

- 2.4.2 List and be able to differentiate the parts of the upper and lower respiratory systems and identify their functions.
- 2.4.3 Define and compare the processes of external and internal respiration
- 2.4.4 Discuss respiration and pulmonary ventilation , including the mechanics of breathing.
- 2.4.5 Explain how breathing is controlled.
- 2.4.6 Describe the basic respiratory volumes and the significance of each.
- 2.4.7 Identify the factors that influence breathing and their effects.
- 2.4.8 Describe the mechanism of gas exchange in the lungs and body tissues.
- 2.4.9 Explain how oxygen and carbon dioxide are transported by blood.
- 2.5 Digestive System and Metabolism:
- 2.5.1 Identify the organs of the digestive system and their structure and functions including accessory organs
- 2.5.2 List and describe the four layers of the digestive tract wall and discuss the value of each layer to the digestive organs.
- 2.5.3 Discuss the steps in processing food (Ingestion, Digestion, Absorption, Elimination)
- 2.5.4 Identify the end products of digestion and their sites of absorption
- 2.5.5 Compare mechanical and chemical digestion.
- 2.5.6 List the major enzymes of the digestive system, where each is produced, where each acts and which nutrient each breaks down.
- 2.5.7 Discuss the basics of carbohydrate, protein and lipid digestion and give the end products of each process.
- 2.5.8 Define and understand metabolism and metabolic rate (including Basal Metabolic Rate).
- 2.5.9 Describe the metabolic roles of carbohydrates, lipids, proteins, vitamins and minerals (including sources and uses).
- 2.5.10 Describe the basic steps in glycolysis, the citric acid cycle, and the electron transport chain and summarize the energy yields of glycolysis and cellular respiration.
- 2.5.11 Discuss thermoregulation and the processes of heat transfer (eg radiation, conduction, convection ,evaporation)
- 2.6 Urinary System:
- 2.6.1 Name and describe the structure and function of each of the organs of the urinary system.
- 2.6.2 Name and describe the specific structures of the kidney and their basic functions.
- 2.6.3 Describe the structure and function of blood supply of the kidney (including GFR and hormonal controls- RAAS, ADH, Aldosterone, ANP).
- 2.6.4 Describe in detail the functioning of the nephron including filtration, tubular reabsorption and tubular secretion.
- 2.6.5 Explain how urine is formed and control of urination.
- 2.6.6 Identify the physical and chemical characteristics and components of normal urine.
- 2.6.7 Explain how the kidneys maintain blood plasma composition.
- 2.6.8 Define the terms fluid balance, electrolyte balance and acid base balance, discuss the importance for homeostasis and describe how water and electrolytes are distributed throughout the body.
- 2.6.9 Explain the basic processes involved in maintaining fluid and electrolyte balance.
- 2.6.10 Explain the buffering systems that balance the pH of the intracellular and extracellular fluids.
- 2.7 Reproductive System:
- 2.7.1 Identify and describe the structure and function of the organs of the male reproductive system.
- 2.7.2 Name and identify the function of the main male hormones.
- 2.7.3 Describe the production, structure and composition of sperm

2.7.4 Identify and describe the structure and function of the organs of the female reproductive system.

2.7.5 Name and identify the functions of the main female hormones.

2.7.6 Explain the process of oogenesis in the ovary.

2.7.7 Discuss and understand the ovarian and uterine (menstrual) cycles.

2.7.8 Discuss fertilization, gestation and the stages of labor.

3.0 Examine the interrelationship of cells, tissues and organs of stated body systems.

3.1 Endocrine System.

3.2 Lymphatic System.

3.3 Cardiovascular System.

3.4 Respiratory System.

3.5 Digestive System.

3.6 Urinary System.

3.7 Reproductive System.

4.0 Describe significant development changes that occur throughout the lifespan for the stated

body systems.

4.1 Endocrine System.

4.2 Lymphatic System.

4.3 Cardiovascular System.

4.4 Respiratory System.

4.5 Digestive System.

4.6 Urinary System.

4.7 Reproductive System.

5.0 Explain the basic concepts of inheritance/genetic predisposition.

5.1 Explain the roles of DNA, genes and chromosomes (human genome).

5.2 Describe the basic patterns of inheritance.

5.3 Distinguish between dominant and recessive

5.4 Describe sex-linked inheritance and how genetic mutations may occur

5.5 Explain the mechanisms of genetic disease and list some important inherited diseases.

5.6 List some tools in genetic counselling (Punnet Squares, Pedigree, Karyotypes)

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):

Practical Nursing

2. assess clients across the life span, in a systematic and holistic manner.

ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES

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

5. Use a variety of thinking skills to anticipate and solve problems

EXTERNAL COURSE ACCREDITATIONS AND CONDITIONS

This course is a compulsory course within the Canadore College Practical Nursing Program, as reviewed and approved by the College of Nurses of Ontario.

COURSE EVALUATION

Quizzes/Tests/Exams 100%

PROGRAM SPECIFIC GRADING

Successful completion of this course requires a minimum grade of C.

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, included in GPA
								FS- Failure Supplemental
								FR- Repeat course, excluded from GPA

*For a complete chart of grades and descriptions, please see the Grading Policy.

LEARNING RESOURCES

Course Textbooks:

Required:

Title: See Below

ISBN:

Edition:

Author:

Other Resources:

Martini, F. & Bartholomew, E. (2020) Essentials of Anatomy & Physiology Etext Access Card plus Mastering A&P Package ISBN - 9780135215753 (Winter 2023)

Or Package ISBN - Hardcover + Modified Mastering A&P with eText access card package - 9780135746936 (Fall 2022)

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.

Technology requirements - <https://www.canadorecollege.ca/BYOD>

The Harris Learning Library's staff can help you find resources to support your learning - www.eclibrary.ca

LEARNING ACTIVITIES

On-line activities/discussions

In class activities/discussions

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.

RECORDING GUIDELINES

This class may be recorded by faculty of the College. Faculty will inform students when recording of the class commences and ceases. 'Recorded' means that the audio-visual and chat portions of the class will be recorded and then be stored on the College or vendor provider server. They will be made available to students, but only for the express and sole use of those registered in this course. If you have any questions or concerns about this recording, please contact your instructor or the College's privacy officer at privacy.officer@canadorecollege.ca. Full recording guidelines can be found at: <https://cdn.agilitycms.com/canadore-college/academic-centre-of-excellence/Canadore%20Recording%20Guidelines.pdf>

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!

Student Success Services provides student-focused services to facilitate students' success in their studies. Staff provide support by reducing and/or removing educational-related barriers through individualized

accommodations and supports to students with disabilities.

Please visit our webpage to learn more: <https://www.canadorecollege.ca/support/student-success-services> or look for our events on social media.

To connect with Student Success Services email studentsuccessnow@canadorecollege.ca or call 705.474.7600 ext 5205.

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.

<https://www.canadorecollege.ca/experience/indigenous-student-experience>

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

ADDITIONAL DISCLAIMER NOTE

Students are expected to adhere to the policies and procedures as outlined in their Student Success Guides 2022-2023