

# ANATOMY and PHYSIOLOGY 12 SELF-PACED ONLINE

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**SCHEDULE:** Monday 4:00pm - 9:00pm  
Tuesday 10:00am - 2:00pm  
Wednesday 4:00pm - 9:00pm  
Thursday 10:00am - 2:00pm

**LEARNING CENTRE HOURS:** Monday - Friday 10:00am - 2:00pm

Monday - Thursday 4:00pm - 9:00pm

The Learning Centre is closed all statutory and school holidays.

## INTRODUCTION

Anatomy and Physiology 12 is an overview of human anatomy and physiology from the molecular level to the organ system level. The first part of the course covers cell structure and function. The second part covers basic human anatomy and physiology. The underlying theme of the course is homeostasis – the maintenance of a steady state within the organism.

## PRESCRIBED LEARNING OUTCOMES

Students are expected to know the following:

- biological molecules
- metabolism and enzymes
- feedback loops and regulation of the body's internal environment
- transport across a cell membrane
- DNA:
  - the cell's genetic information
  - replication
- gene expression
- proteins and their relationship to the structure and function of all cells
- genomics and biotechnology □ micro to macro organization
- organ systems:
  - structure and function
  - structural and functional interdependence
  - maintenance of homeostasis
- lifestyle differences and their effects on human health
- holistic approach to health
- disease as an imbalance in homeostasis

Source: <https://curriculum.gov.bc.ca/curriculum/science/12/anatomy-and-physiology>

## **LEARNING RESOURCES**

The information needed to complete the objectives of Anatomy and Physiology 12 is presented online in the Moodle website. You are provided with a textbook 'Inquiry into Life' by Sylvia Mader to fill in any extra information needed.

The individual unit objectives specify the information that must be mastered for each unit. Please note, Anatomy and Physiology textbooks/online courses often contain a lot of information in the charts, diagrams and figures that is not included in the written material, so be sure to look there for information as well.

There are also extra practice questions available for each unit to help you prepare for your tests.

## **Anatomy and Physiology 12 Self-Paced Online at CLOC**

Anatomy and Physiology 12 at Coquitlam Learning Opportunity Centre is a self-paced, selfdirected course. You will be expected to work independently and to manage your time productively. If needed, individual help is available from the Anatomy and Physiology instructors at the Learning Centre. You may contact your instructor in person during scheduled hours at CLOC or by email.

## **UNITS OF STUDY**

| <b><u>UNIT</u></b> | <b><u>CONTENT</u></b>                    |
|--------------------|--|
| 1.                 | Homeostasis, Cell Structure              |
| 2.                 | Biological Molecules                     |
| 3.                 | DNA, RNA, Protein Synthesis, rDNA        |
| 4.                 | Transport across Membranes               |
| 5.                 | Experimental Design, Enzymes             |
| 6.                 | Cells, Tissues, Organs, Digestive System |
| 7.                 | Circulatory System                       |
| 8.                 | Blood                                    |
| 9.                 | Respiratory System                       |
| 10.                | Excretory System                         |
| 11.                | Nervous System                           |
| 12.                | Reproductive System                      |

## EVALUATION

Evaluation in Anatomy and Physiology 12 includes 12 unit tests, a midterm test, and a final exam. All tests contain both multiple-choice and written-response questions. You will be expected to recognize and label molecules and diagrams. ONE REWRITE \* is available for each unit test, but a rewrite must be done before proceeding to the next unit test. If you do rewrite, your score for that unit will be the average of the two attempts. The midterm covers units 1-6 and may contain questions that connect more than one unit. The final exam covers the entire course. There are NO REWRITES for the midterm and the final exam. The tests will be weighted as follows:

| <u>TEST</u> | <u>CONTENT</u>                           | <u>PERCENT</u> |
|-------------|--|----------------|
| Unit 1      | Cells                                    | 5              |
| Unit 2      | Biological Molecules                     | 5              |
| Unit 3      | DNA, RNA, Protein Synthesis, rDNA        | 5              |
| Unit 4      | Transport across Membranes               | 5              |
| Unit 5      | Experimental Design, Enzymes             | 5              |
| Unit 6      | Cells, Tissues, Organs, Digestive System | 5              |
| Midterm     | Units 1 - 6                              | 15             |
| Unit 7      | Circulatory System                       | 5              |
| Unit 8      | Blood                                    | 5              |
| Unit 9      | Respiratory System                       | 5              |
| Unit 10     | Excretory System                         | 5              |
| Unit 11     | Nervous System                           | 5              |
| Unit 12     | Reproductive System                      | 5              |
| Final Exam  | Units 1 - 12                             | 25             |
|             |  | <hr/>          |
|             |  | 100            |

\* **Do not abuse the rewrite privilege.** Rewrites are meant to give students an opportunity to make up for the occasional poor performance. If you get into the habit of rewriting too many unit tests, you will receive a warning. If you continue rewriting too many tests, your rewrite privileges may be revoked, at the teacher's discretion.



## TEST TERMS

The following terms may turn up in questions on Anatomy and Physiology 12 tests.

**Compare** Look for **similarities and differences** between items to be compared. If using sentence format there should be one comparison per sentence. Each comparison has **two** parts to it.

**Q.** Compare red and white blood cells.

**A.** White blood cells are nucleated whereas red blood cells are not.

Both white and red blood cells are produced in red bone marrow.

Another way to answer a comparison question is to set up a table.

|                     | White Blood Cells | Red Blood Cells |
|---------------------|-------------------|-----------------|
| Presence of Nucleus | Nucleated         | No nucleus      |
| Site of production  | Red bone marrow   | Red bone marrow |

**Contrast** A contrast question is set up the same way as a comparison question but focuses only on the **differences** between items.

**Diagram** Give a drawing, chart, plan, or graphic answer; label the diagram and add a brief description if needed.

**Define** Give concise and clear meanings. Do not give details, but make sure to give the limits to the definition.

**Q.** Define homeostasis.

**A.** Homeostasis is the maintenance of the internal environment within a narrow physiological range.

**Describe** Give a detailed account of an object, event, or sequence of events. **Q.**

Describe secretion of a protein.

**A.** A protein is made in ribosomes on the surface of the rough endoplasmic reticulum. It then moves into the lumen where it may be modified. The protein then moves through the lumen of the smooth endoplasmic reticulum to its outer face. There the protein is enclosed in a vesicle which then moves to the Golgi apparatus. The vesicle fuses with the Golgi apparatus. The protein may be modified if needed. It is then sorted and stored until ready for secretion. When it is ready for secretion the protein is enclosed in a vesicle which moves towards the cell membrane. The vesicle then fuses with the cell membrane and releases its contents outside of the cell.

**Differentiate** A differentiate question is the same as a contrast question.

**Explain** Clarify and interpret the material. Usually this means giving reasons why.

**Q.** Explain why alveoli are ideally suited to their function.

**A.** Alveoli are ideally suited to their function of gas exchange because they are numerous and small which increases surface area; they also have thin walls and they are surrounded by a capillary network which minimizes the distance for diffusion of gases between air and blood.

**Give a function**

This means to give the role of something i.e. what does it **do**.

**Q.** Give one function of the following in protein synthesis:

- a) DNA
- b) mRNA

**A.** a) DNA provides the code for the order of amino acids in the protein  
b) mRNA transfers the code from DNA in the nucleus to the cytoplasm

**List**

Give a series of names, ideas, or things which belong to a particular class of items; write an itemized series of concise statements.

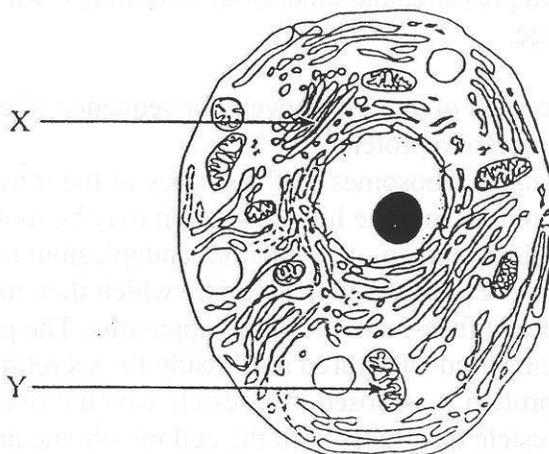
**A.** List the five types of blood vessels .

**Q.** The five types of blood vessels are arteries, arterioles, capillaries, venules, and veins.

**Name**

Identify a particular item or group of items. This is very similar to list. If used in conjunction with a diagram it will mean identify a specific part of the diagram, usually labelled with a letter or number.

**Q.** Name the labelled parts.



**A.** X Golgi apparatus  
Y Mitochondria