

**Course:** Anatomy and Physiology 12

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Course Description:

Anatomy and Physiology 12 (Biology 12) investigates the processes and structures which make up the human body. The course will examine structures at the cellular level (biochemistry, cell biology) and organ systems (including digestive, respiratory, cardiovascular, urinary, immune, and nervous systems). Students will need to demonstrate how small-scale changes at the chemical and cellular level can impact a human being. At the conclusion of the course, students will understand through inquiry, virtual labs/dissections/simulations, and projects how the human body maintains homeostasis.

Summer Learning Beliefs:

Summer Learning provides an engaging learning environment where all students can challenge themselves academically and fulfill their learning goals. To ensure this, students will:

- abide by the student Code of Conduct
- adhere to the Academic Honesty Policy
- adhere to the Summer Learning Student Engagement policy
- respect themselves and others
- attend every class and be punctual
- inquire, think, and engage to the best of their ability
- access technology in class when instructed to do so and for learning purposes only
- challenge themselves and have fun learning

All Summer Learning policies can be accessed at: <https://www.sd44.ca/school/summer/policies/Pages/default>.

## Course Outline:

Unit	Essential Questions	Content	Curricular Competencies	Assessment Task
<b>Biochemistry</b>	How do molecular processes impact human physiology?	<ul style="list-style-type: none"> <li>- Cellular compounds</li> <li>- Biological molecules</li> <li>- Protein structure and function</li> <li>- Enzymes and metabolic pathways</li> <li>- Cytology and organelle function</li> <li>- DNA replication</li> <li>- Protein synthesis</li> </ul>	<p><b>Planning and Conducting</b></p> <ul style="list-style-type: none"> <li>- Collaboratively and individually plan, select, and use appropriate investigation methods, including lab experiments, to collect reliable data</li> <li>- Assess risks and address ethical, cultural, and/or environmental issues associated with their proposed methods</li> </ul> <p><b>Processing and Analyzing Data and Information</b></p> <ul style="list-style-type: none"> <li>- Seek and analyze patterns and trends, and connections in data, including describing relationships between variables, performing calculations, and identifying inconsistencies</li> <li>- Construct, analyze, and interpret graphs, models, and/or diagrams</li> </ul> <p><b>Applying and Innovating</b></p> <ul style="list-style-type: none"> <li>- Implement multiple strategies to solve problems in real-life, applied, and conceptual situations</li> <li>- Consider the role of scientists in innovation</li> </ul>	<ul style="list-style-type: none"> <li>- Water lab</li> <li>- Biological molecules lab</li> <li>- Liver Enzyme lab</li> <li>- Cell mapping project</li> <li>- DNA replication and protein synthesis story/animation</li> <li>- Daily Bell Ringer Quizzes</li> <li>- Checkpoints</li> <li>- Unit Tests</li> </ul>
<b>Organ Systems</b>	How are organ systems integrated with one another to ensure homeostasis?	<ul style="list-style-type: none"> <li>- Digestive system</li> <li>- Respiratory system</li> <li>- Circulatory system</li> <li>- Immune system</li> <li>- Urinary system</li> <li>- Nervous system</li> </ul>	<p><b>Communicating</b></p> <ul style="list-style-type: none"> <li>- Communicate scientific ideas and information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representations</li> </ul> <p><b>Questioning and Predicting</b></p> <ul style="list-style-type: none"> <li>- Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal, local, or global interest</li> <li>- Make observations aimed at identifying their own questions, including increasingly abstract ones, about the natural world</li> <li>- Formulate multiple hypotheses and predict multiple outcomes</li> </ul>	<ul style="list-style-type: none"> <li>- Dissections: Brain, Heart, Kidney, and Fetal Pig</li> <li>- Case Studies</li> <li>- Organ System Mapping Models</li> <li>- Daily Bell Ringer Quizzes</li> <li>- Checkpoints</li> <li>- Unit Tests</li> <li>- Exit Interview</li> </ul>

## Grade Descriptors:

An “A” student will/can....

Produces high-quality, frequently innovative work. Communicates scientific ideas to connect and synthesize concepts and skills learned over time. Consistently demonstrates sophisticated critical and creative thinking. Collects, presents, and correctly transforms experimental data. Interprets, analyzes and critiques scientific findings and experimental data. Frequently transfers and extends knowledge and skills and uses concepts to solve non-routine, real-world problems, displaying initiative and expertise in their approach. Virtually no support is needed. Mistakes made are not reflection of gaps or deficiencies in mastery.

A “B” student will /can ...

Sometimes produces high-quality, innovative work. Communicates scientific ideas to compare and critique concepts and skills learned over time. Consistently demonstrates a degree of critical and creative thinking. Collects and presents scientific data in an appropriate manner. Assesses, interprets, and revises scientific findings and experimental data. Transfers knowledge and skills and uses concepts to consistently solve routine, real-world problems correctly with minimal guidance and occasional periods of greater support, with some mistakes sometimes indicative of gaps in mastery.

A “C” student will /can ...

Produces work of an acceptable and inconsistent quality. Communicates a basic understanding of scientific concepts and operates superficially within a scientific contextual framework. Displays an emergent level of application when it comes to critical thinking skills. Collects scientific data in an appropriate manner. Is inflexible in the use of knowledge and skills, requiring moderate to high levels of support even in familiar classroom situations. Makes attempts to use knowledge, skills and scientific concepts to solve routine, real-world problems, with frequent mistakes indicative of gaps in mastery.

## Resources:

Resources
Anatomy and Physiology 12 Student Resource (2018) by Roger Prior, resource will be supplied on the first day of instruction. Approximate price \$25.
Microsoft Teams will be used on a regular basis for assignments and supplemental material.
<a href="mailto:npanah@sd44.ca">npanah@sd44.ca</a>

We would like to thank the Coast Salish people, specifically the Skwxwú7mesh Nation and Tsleil-Waututh Nation, on whose unceded traditional territory the North Vancouver School District resides. We value the opportunity to learn, share and grow on this traditional territory.